

AMERICAN VETERINARY REVIEW.

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EDITORIAL.

PROSPECTS OF THE ARMY BILL.

At the approaching meeting of the A. V. M. A. it will behoove the members to give very earnest consideration to the status of the amendment to the Army Reorganization Bill, which passed the Senate May 4 and now hangs in midair, having yet to run the gauntlet of the House of Representatives. The fact that we have gained a half victory by a very narrow margin should not produce over-confidence, and we should regard the work to be done as far greater than that which has been accomplished. An analysis of the vote in the Senate when Mr. Kenney's amendment was adopted—yeas 25, nays 23, not voting 39—does not justify the feeling that the battle is nearly won. In the June REVIEW we very thoroughly summarized the discussion in the Senate, and gave there the substitute amendment offered by the Secretary of War. The outspoken opposition of the Secretary is very unfortunate for the cause, and probably proceeds from our enemies in the War Department, as it is scarcely likely that the new head of the department can be familiar enough with the details of the service to have any decided opinion on the subject. What we need most of all is intelligent missionary work with the Secretary, giving him a clear idea of the scope of the proposed corps, making it plain how advantageous it would be to the efficiency of the Army in peace and war. The necessity for this may be clearly seen by his recommendations

to Congress. He has been asking for recommendations from the various heads of departments of the Army as to the needs of the service; why should he not ask what a chief veterinarian would recommend? We suggest to the national association the creation of a special committee to work with the Secretary of War before the assembling of Congress, so that our cause may be espoused rather than opposed by the executive head of the War Department. If his friendship cannot be gained there will be just that much harder battle for our workers at the front. But with his powerful influence on our side, and a strong influence brought to bear upon Representatives throughout the country, and especially the members of the Committee on Military Affairs, the struggle would be short and decisive. We have been forewarned by our experience in the Senate; let us be forearmed for the conflict in the House. Nor should we adopt any "rule or ruin" tactics. If it becomes morally certain that the amendment cannot pass in its present form, we should not disdain a respectable compromise, obtaining the high ranks asked for and yet making the service subordinate to the Adjutant-General's office. This would be much better than to lose everything in the cry of "all or nothing." We gained much in 1899, and to lift our representatives in the army to high commissioned officers (in place of civilian nonentities, as they have ever been) would be a wonderful stride for 1900. The multiplicity of wars, which seem to be rearing their ugly heads from all corners of the earth, may make it necessary in a short time to greatly increase the numerical strength of the standing army of this country, especially the cavalry arm of the service (which has been clearly proven to be the most efficient), and then it may be a simpler proposition to ask that the veterinary service be organized into a corps, as now sought to be created.

These remarks are offered for the consideration of those who have given to the subject so much hard work and careful thought, in the hope that out of the national body may come forth a wise and successful programme for the struggle that yet lies before us.

"THE DOCTOR BE D—D."

"The average patient when nearly well of a sickness will take a bottle of Rotgut's Relief or a box of Poopendike's Pills, and to these he will give all the glory, and 'the doctor be d—d.'—*Medical World*. The experienced veterinarian is fully capable of comprehending the *ennui* which actuated the writing of the above paragraph.—L. A. M."

We have copied the above item from this month's installment of the "Department of Surgery" for the purpose of giving it more prominence, and of discussing some of the phases of the inferences contained in it. The first section of the paragraph, credited to the *Medical World*, suggests a familiar experience with medical and veterinary practitioners, and is simply a terse way of stating the termination of very many cases, the treatment of which has consumed considerable time. The second portion of the paragraph, signed "L. A. M.", is in the nature of an endorsement of the truth of the *Medical World's* observation from a veterinary standpoint, and is from the pen of that well-known surgeon and writer, Prof. L. A. Merillat, of Chicago. We desire to see whether the number of such terminations cannot be reduced, and to inquire if they are not in some instances directly traceable to the veterinarian. Of course, we have no intention of conveying the impression that they can always be avoided, but are there not many cases where more diplomacy on the part of the practitioner would save his client to him and he receive just credit for his intelligent and well-directed curative efforts? It is disheartening to a conscientious practitioner to have a client enter his sanctum holding in his hand a bill that had been sent to him some months previously for attendance upon a lame horse, which had received a very effective application of the actual cautery, and ask if half the price charged isn't sufficient, "particularly as you didn't cure my horse. He was just as bad when you got through as he was before you begun; so a friend of mine told me to rub him with hot vinegar, and he's come all right." That sounds familiar, doesn't it? Here's another: You are called to a violent case of gastric indigestion, the animal eructating gas and having dyspnœic symptoms. You administer antiferments and absorb-

ents, with anodynes and other approved therapeutic measures. Finally the patient ceases the symptoms of distress, his rapid pulse and respirations subside, and he is considered out of danger. His appetite is entirely suspended, however, and the practitioner knows that the proper treatment is to allow the stomach a good rest until it can regain its normal functions, at which time the appetite will return as rapidly as is consistent with its condition. He advises his client of this, who remains dormant for twenty-four hours, at which time, food still being refused, the assafoetida bag is forced into the mouth of the unresisting patient, and he is compelled to chew on it for a couple of days, when, his stomach having recovered by enforced idleness, the animal begins again to eat. The owner of that horse becomes a living testimonial to the value of this remedy, and he does not hesitate to make known the fact that his veterinarian failed to cure his horse. Or, again: A patient is brought to the veterinarian with skin eruptions, or with pimples from plethora, and is placed under depletive treatment, inaugurated by the exhibition of a brisk cathartic, and possibly followed by some alkali or arsenical solution. The blood has been so depleted by the purge that improvement begins, but the pimples not disappearing rapidly enough, a friendly neighbor's advice to try some condition powder or slippery elm is taken, and after a time the skin clears up. The work of the veterinarian is entirely forgotten by the magic of the slippery elm.

These instances could be prolonged until this issue of the REVIEW would be of its usual number of pages, and then only half justice would have been done the subject. But these being taken for samples of many, we submit that the picture is not overdrawn. Every practitioner has had just such experiences many times over. While the ones cited usually occur among the ignorant class of owners, they are not confined to them. The rich man, or the one who imitates the rich man, does it a little differently. He either sends for another veterinarian, or places the case in the hands of some friend of his coachman. The difference is in methods, not in results.

The question is how to lessen such results. In the case of the lame horse, we believe the tendency among most practitioners is to give too favorable a prognosis; that is, in order to make the treatment more enticing, the date of recovery is too much curtailed. They know that if the client is told that by firing and blistering his lame horse he cannot hope to have him back into service for three months that the chances are it will not be undertaken, and the prospective fee vanishes. The truth should be the only guide. Reputations are worth more than the few dollars that injure the recipient in the end.

In the second case, medical treatment should not cease until the patient has entirely recovered, appetite and all. The stomachics, mild and unirritating, will be beneficial to the patient in more ways than one. The principal good they do is to keep the owner from harmful meddling, and the practitioner will receive ample credit for his part in the recovery.

A veterinarian without a certain amount of business diplomacy will find many instances where his reputation will suffer, while his brother, with more skill in the handling of men, will gather laurels, as well as shekels. We have no intention of advising that this be carried to the extent of humbuggery, but it is conscientious medical treatment where the patient is protected at the same time that the practitioner's local reputation is taken care of.

DR. SCHWARZKOPF OFF FOR CHINA.

Olof Schwarzkopf, V. M. D., known wherever English veterinary literature is read, who recently underwent a stringent civil service examination for appointment as veterinary surgeon, first-class, in the U. S. Army, was summoned to Washington on July 19, and received orders to immediately proceed to China, with the Third Cavalry. The order was modified sufficiently to permit the Doctor to return home and arrange his affairs, and he left on the 26th. This was rather a harsh summons for a starter; but, soldier-like, he obeyed without a murmur, and is at this writing on his perilous journey to the

Orient. Mrs. Schwarzkopf will remain in the vicinity of New York until the Doctor has an opportunity to know something of his destiny. While the Army will gain a valuable veterinary officer, and the profession a representative in the service who will reflect credit and dignity upon it, thereby materially assisting in the elevation of the service, the profession at home will lose an esteemed and hard-working colleague, for he was ever ready with his pen and voice to assist in any movement looking to its advancement. Especially will REVIEW readers miss his valuable editorial contributions. But our last note from him as he hurried to catch the train for his long journey was: "Will forward notes from China for REVIEW if at all possible." We invoke the blessings of the Deity upon the good Doctor. May his trip be safe, and his return certain.

CAN YOU AFFORD TO STAY AWAY FROM DETROIT?

REVIEW readers will find elsewhere the full programme, so far as obtainable at this date, of the thirty-seventh annual meeting of the American Veterinary Medical Association, which convenes at the Russell House, Detroit, Mich., September 4, continuing on the 5th and 6th, while the generous hearted veterinarians of that section, unwilling to take the members away from the important events of the programme, and yet desirous of showing their appreciation of the presence of the national body in their midst, have arranged a delightful series of events for the 7th, including a visit to the great laboratory of Parke, Davis & Co., where luncheon will be served, and a picturesque steamer trip, at the termination of which a "frog and fish" supper will be the entertainment while the members are engaged in pleasant social communion. Carefully study the programme and ask yourself the question: "Can I afford to stay at home?"

THE NEW YORK STATE MEETING.

The week following the meeting of the American Veterinary Medical Association, the New York State Veterinary Medical

Society will hold its tenth annual meeting at Ithaca, the seat of Cornell University. Great efforts are being put forth to make this an important and profitable occasion from every phase, the clinical feature being an especially strong one for this meeting. Elsewhere in this number will be found an outline of the programme, and it is certainly sufficiently attractive to cause every veterinarian who can possibly lay aside his work for two days to accept the broad invitation to join with the members in making this the most successful meeting in the history of the society.

DR. ADOLPH EICHHORN, of the American Veterinary Hospital, New York, contributes to the current number of the REVIEW the first details of an operation for the relief of bone spavin which has been engaging the attention of European veterinarians for some time. It consists in neurectomies of the tibial and peroneal nerves, and is styled "double neurectomy for spavin." There are several cases at the American Veterinary Hospital awaiting this operation, and the Doctor promises that REVIEW readers shall be kept informed as to the results in the minutest detail; and if they are as successful as those reported by our European colleagues, there can be but little question as to the popularity of the procedure with American veterinarians, as hitherto the results in many cases have been exceedingly embarrassing.

THE death of Prof. O. C. Marsh removes the most eminent authority on the prehistoric horse. He discovered in the Rocky Mountains and elsewhere many distinct specimens of the original horse, belonging to thirty distinct species, and he dug out a great many other perfect fossil animals as well. No one ever made so many important discoveries in the rocks as he did in this particular line, and at thirty-one years of age he was famous in the scientific world. He was the leading authority on the fossil horse, and apparently brought to aid him in his work a measure of good luck never enjoyed by any other geologist. Fortunately he leaves behind him a complete account of his discoveries.—(*Breeder's Gazette*.)

ORIGINAL ARTICLES.

TEXAS FEVER.

EXPERIMENTS MADE BY THE MISSOURI EXPERIMENT STATION
AND THE MISSOURI STATE BOARD OF AGRICULTURE, IN CO-
OPERATION WITH THE TEXAS EXPERIMENT STATION, IN
IMMUNIZING NORTHERN BREEDING CATTLE AGAINST TEXAS
FEVER FOR THE SOUTHERN TRADE.

By J. W. CONNAWAY, VETERINARIAN MISSOURI EXPERIMENT STATION,
AND M. FRANCIS, VETERINARIAN TEXAS EXPERIMENT STATION.

(Continued from page 256.)

"COLLEGE STATION."—6 HEAD SPECIAL EXPERIMENT CATTLE.

This lot consisted of one pure bred Shorthorn bull and five high grade Shorthorn heifers. They were about ten months of age, and were raised in Cooper and Boone counties, Missouri. They arrived at the Texas Experiment Station in good condition January 1st, 1899.

On Jan. 7th each received subcutaneously 1 cc. of defibrinated immune blood from a grade Shorthorn cow on which were a considerable number of ticks (*B. bovis*) in various stages of development. The calves were kept in a dry lot, in which there were no ticks, and were not allowed to come in contact with Texas cattle, or tick infested grounds, until April 11th. They were examined regularly and carefully for ticks. In doing this each one was turned on its back to allow a thorough examination. All the heifers had white skin along the belly, so that it was exceedingly improbable that any ticks were attached to them and escaped notice, until they were sent to the pasture in April. Their diet at the north had consisted of hay, ground corn, oats and bran. This was gradually changed to cotton seed meal, bran and oats, and cotton hulls. They were fed regularly all they would eat. Daily temperature records were made from Jan. 7th until August 31st. The changes in the blood were determined by the "haematokrit." The blood was examined

twice a week. A gap occurs in the record, from March 22 to April 17th, on account of an accident to the apparatus. All of the samples of blood for examination were taken from the ears, and at once subjected to a very rapid centrifugal action. By comparison with other cattle's blood we may regard the normal percentage of red blood corpuscles to be from 35 per cent. to 40 per cent. No effects of the inoculation, either local or systemic, were noticed until Jan. 14th, eight days after inoculation, when the haematokrit readings indicated a destruction of the blood corpuscles. At the beginning of the experiment the average per cent. of red corpuscles in the blood was 38.3. On the 8th day of the experiment it had fallen to an average of 31.3 per cent. The rise in temperature in the several animals was very abrupt, rapid and almost simultaneous. It appeared on the 9th and 10th days after inoculation. We call this the primary fever period. The morning temperatures ranged from 103.6° the lowest to 105.6° the highest. This continued from 7 to 9 days and then returned to normal. The destruction of the blood corpuscles continued until on the 13th day of the experiment the average was 27.3 per cent.; on the 15th day it was 23.3 per cent. By the 19th day (Jan. 25th) the fever had ceased, and the blood gained a little, reading an average of 24.5 per cent. See graphic record Fig. 12.

The symptoms of digestive disorder are worthy of mention. During the fever we noticed a lack of relish, though they continued eating. The well ones crowd the sick aside. If the sick ones were fed separately, they consumed a reasonable amount. We noticed among some calves bloating and a disposition to eat quantities of dirt. In some cases there was diarrhoea, and discharging of mucous from the nostrils, muscular weakness, trembling, and a desire to lie down for considerable periods. In no case was bloody or red urine noticed. By the 18th day the fever of the primary reaction had entirely ceased. The lowest average per cent. of blood corpuscles resulting from the primary reaction was 23.1 per cent., which occurred on the 15th day. From the 18th to the 29th day the

calves appeared normal. Their appetite improved, and their blood corpuscles increased in numbers. By the 25th day the average per cent. had risen to 31.

The secondary fever period began on the 28th or 29th day. It greatly resembled the primary one in its severity, but differed from it in continuing longer, and in appearing in some animals on the 28th and 29th day, while in others it appeared on the 34th or 35th day. The haematokrit readings also show a second fall in the blood corpuscles. This reached its lowest average (21 per cent.) on the 39th day. The lowest individual on that day was 14 per cent., the highest 26 per cent. The secondary reaction must be regarded as due to the activity of the micro-organism in the blood, and not to a reinfection from without. Every calf was examined with great care for ticks until the 90th day, but none were found. Moreover, in the case of the Tod bulls inoculated the previous fall at the Missouri Station there was no possibility of the *secondary reaction* being due to a secondary invasion of the micro-parasites from tick-infestation, as these bulls were in noninfected territory. The secondary fever period did not terminate so abruptly as the primary, but showed a tendency to an occasional high temperature. For instance, we found No. 3 with a temperature of 105° on the morning of the 47th day, and No. 1 with 103.5° on the 54th day, and No. 4 with 103.8° on the 59th day. The calves gained in weight and growth, and their blood showed some improvement, which was slow but steady.

Second inoculation.—2 cc. of defibrinated immune blood was given on the 77th day (March 23d) subcutaneously to all except No. 4. A mild reaction followed in about eleven days; the highest morning temperature found was 104.1° . Calf No. 4 was not given the second dose of 2 cc. with the others, and showed a morning temperature of 104.2° on the 94th day, which was at the same time the other calves were reacting from the second inoculation. No record of blood changes was possible, because the haematokrit was out of order at that time. The first reexamination of the blood occurred on the 106th day.

(April 20), at which time the average per cent. was 33.5. The lowest average reading found since that time was 30.5 per cent., which occurred on the 113th and 120th days.

Third inoculation.—On May 18, the 132d day, a third inoculation was made. This consisted of 2 cc. of immune, defibrinated blood given subcutaneously to Nos. 1, 2, 3 and 5. No. 4 received 1 cc. of the same material. (No. 6 had died of black-leg on April 10th.) The reaction from this was very feeble. The highest morning temperatures noticed were: No. 1, May 28th, 102°; No. 2, May 20th and 23d, 103.3°; No. 3, May 25th, 103.4°; No. 4, May 25th, 105.2°; No. 5, May 28th, 103°.

It appears from this that No. 4 showed some reaction, but it was of short duration. The others may be regarded as a very feeble reaction, if any. The hæmatokrit readings do not indicate any appreciable blood destruction, so that we may regard the third injection as producing no effect, and assume that immunity has been attained. These cattle were placed in the pasture April 11th. It remains to be shown that they were exposed to infection. They were frequently examined for ticks.

The cattle were infested with young ticks (*B. bovis*) on May 5th, May 6th and May 27th. During June and July they carried and matured a few fever ticks. It was not until August

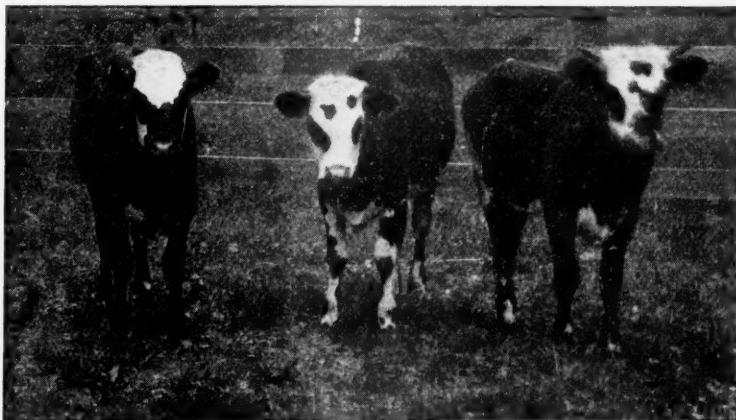


FIG. 10.—GRADE HEIFERS FROM BOONE COUNTY, MISSOURI, USED IN INOCULATION EXPERIMENTS AT THE TEXAS EXPERIMENT STATION.

that any considerable numbers of ticks were carried. There did not seem to be any constitutional disturbance due to their presence, as shown either by the thermometer or by haematokrit examinations of the blood. The experiment closed August 31st, 1899. There was no fever among the cattle, nor had there been any. The average per cent. of red blood corpuscles was 33.4 at that time.

KRUGER.—6 HEAD OF REGISTERED HEREFORDS.

This lot consisted of six pure bred Herefords, two bulls and four heifers, whose ages ranged from six to twelve months. They were raised near Emporia, Kansas, and had been shipped south, where they arrived December 7, 1898, at the Carter ranch in Bee county, Texas.

On December 17, 1898, each received 1 cc. of defibrinated blood from the jugular vein of a three-year-old cow on the ranch. This cow had a considerable number of ticks on her at this time. The calves were kept in a dry lot and fed bran and cactus, and watered from a cistern.

January 23, 1899. Saw these calves. All have lost flesh, and there is marked looseness of their bowels. They were evidently in the secondary fever period. The temperatures were: Bull No. 1, 106 degrees; Bull No. 2, 105 degrees; Heifer No. 366, 105.8 degrees; Heifer No. 51, 107 degrees; Heifer No. 525, 106.5 degrees; Heifer No. 57, 104.2 degrees. February 6, 1899. Temperature has fallen to the following: Bull No. 1, 104 degrees; Bull No. 2, 104 degrees; Heifer No. 366, 103.5 degrees; Heifer No. 51, 103 degrees; Heifer No. 52, 102.5 degrees; Heifer No. 57, 104 degrees. June 27, 1899. Saw these cattle. Heifer 366 is evidently pregnant. The cattle appear in good condition.

September 15. Bull No. 1, in good thriving condition. Bull No. 2; inoculation has caused arrest in development in this calf. He has been thin but is doing well now. The heifers have done well; the oldest one dropped a calf recently. No deaths.

NUTT.—9 HEAD REGISTERED HEREFORDS.

This lot consisted of nine thoroughbred Herefords, raised in Hartley county, Texas, one bull and eight heifers. They arrived by rail at the Nutt ranch in Bee county, Texas, on January 17, 1899.

On January 23, 1899, each received 1 cc. of defibrinated blood from the jugular vein of a two-year-old heifer which had been raised on this ranch, and which had ticks on her at the time. They were fed bran and cactus daily. The inoculation did not cause much disturbance or loss of flesh. Saw these cattle June 27, 1899. All have a considerable number of ticks on them and appear in good flesh. No deaths.

COOK.—55 HEAD OF HEREFORD BULLS AND HEIFERS.

This lot consisted of fifty-five pure bred Herefords, forty-one heifers and fourteen bulls. Their ages ranged from one month to twenty-two months. Eight of them were raised in Illinois, and the remainder in Hartley county, Texas. They were shipped south by rail and reached Bee county, Texas, February 2, 1899. On February 14, each received 1 cc. of defibrinated blood from a two-year-old heifer. These inoculations were made by Dr. Stephens. This lot has done very well. One death occurred from inoculation and one from blackleg. June 27, 1899, saw these cattle. All have a considerable number of ticks on them, yet they are all in good condition.

RHEA.—15 HEAD REGISTERED SHORTHORN BULLS AND HEIFERS.

This lot consisted of 13 pure bread Shorthorn heifers, 8 to 15 months old, and two bulls, 10 months old. All had been raised in Missouri. They were shipped south by rail and arrived in Collin county, Texas, April 9, 1899. April 15, each received subcutaneously 1 cc. of defibrinated blood from a six-year-old cow. No serious symptoms developed. June 24th, each received a second inoculation of 1 cc. of blood from the same cow as the first dose. A letter from the owner of these

cattle, dated August 29, 1899, says that all of the above cattle have done well and he thinks all the heifers are safe in calf. No deaths.

SUMMARY AND CONCLUSIONS.

The Inoculation Fever and Immunity.—The reports on the Tod cattle, page 24, and the "College Station" lot, page 43, present the important features of the inoculation fever, such as incubation period, duration and severity of the primary and secondary fevers. Attention is called in the graphic record to the sudden fall of the primary fever; this occurs in many cases, and appears to be the critical period. At this time collapse and death may occur in severe cases.

The variation in the percentage of corpuscles during the fever, in comparison with the variation of temperature, is shown in College Station experiment, see chart, page 65. It will be noted that the diminution in corpuscles corresponds closely to the rise of temperature, but continues for a time after the temperature has fallen; and that during the interval between the primary and secondary fever periods, the percentage rises, but falls again on the occurrence of the secondary fever. The table, page 47, gives the haematokrit readings for each animal, and the average for the group.

It must always be kept in mind that the inoculation fever is genuine Texas fever, and that in some cases it will take an acute course and cause death in the inoculated animal. A few words in regard to the pathology of Texas fever and how immunity against it is acquired and maintained, will aid in the more intelligent handling of inoculated cattle, both during the course of the inoculation fever and during exposure to the infection at the South.

When a susceptible animal is infested with ticks or is inoculated with infected blood, the micro-parasites thus introduced attack the blood corpuscles and destroy them in large numbers. This is the essential pathological change in this disease. As a result, the oxygen carrying function of the blood is greatly im-

paired, and a large amount of débris that requires to be eliminated is added to the blood stream.

The recovery from the fever and the maintenance of an immune condition depends upon the ability of the animal, *1st*, to keep in check the growth of the micro-parasites; *2d*, to supply new corpuscles as rapidly as they are destroyed; and *3d*, to remove the waste products promptly.

In regard to the micro-parasites, it is found that in this disease, unlike most others, they probably never entirely disappear from the blood of an animal that has once been well infected. In animals, however, that gain a high degree of immunity, the blood contains comparatively few of the micro-parasitis. This indicates that by some means their multiplication is inhibited. It is probable that the constant presence of the micro-organisms in the blood has stimulated an increased production of white corpuscles ("phagocytes"), and that by these "soldiers and scavengers" of the blood many of the micro-parasites are destroyed.

As to the regeneration of the red blood corpuscles, this is a function that is carried on normally; for in perfect health the corpuscles are constantly wearing out and must be replaced by new ones. The increased destruction of corpuscles due to the micro-organisms of Texas fever simply stimulates those tissues normally concerned in the production of red corpuscles to greater activity. And it is probable that in all immune Southern cattle and in Northern cattle that become immune, a greater activity of these tissues is maintained throughout life.

In regard to the elaboration and removal of the waste products, resulting from the destruction of the corpuscles—the organs mainly concerned are the spleen, liver, kidneys and bowels. The importance of these organs in removing waste products is readily understood by anyone who has seen at the post-mortem of an animal that has succumbed to an acute case of the fever, the enlarged and softened spleen, the intensely yellow liver clogged with bile., and the claret colored urine. In immune Southern cattle the spleen is somewhat larger than

in Northern cattle, which indicates that a more active condition of this organ and probably of the other organs mentioned is maintained throughout life.

The above facts in regard to the pathology of the disease and the way in which immunity is maintained, shows the importance of keeping an animal well nourished and seeing that the eliminative organs are active.

Age of Animal.—The most suitable subjects for inoculation are young cattle from 8 to 12 months old, weighing from 500 lbs. to 800 lbs. They are more easily cared for than younger or older cattle. Calves recently taken from the cow and not well accustomed to a grain and hay diet do not do well; they fall off in flesh and do not regain condition as rapidly as older, well-weaned calves. These younger calves may, however, be safely inoculated if kept with the cow. In August of the present year (1899), thirteen sucking calves, from three to seven months old, were inoculated on a farm near the Missouri Station, and all except one of the smallest calves did well through the inoculation fever. This lot has not yet been exposed to tick infestation. Our experience with animals above 12 months of age is limited. But the fact that in the natural disease older animals are more liable to die, leads to the conclusion that aged bulls and cows can not be immunized as successfully as those of the ages mentioned. The two-year-old Waskom bulls gave good reaction from inoculation, and were sent south in excellent condition. Both, however, had a relapse in the South, and were very sick for a few days, but recovered and have done good service.

Source of Blood for Inoculation.—Blood from two sources has been used; namely, from naturally immune Southern cattle, and from Northern cattle made immune by artificial tick infestation, and blood inoculation. It is probable that the method by which an animal has been made immune can make no difference in the quality of the blood, since the same end is attained—a permanent infection. Recent observations, however, have shown that the blood of different supply animals

may differ in virulence; and that it may vary in the same animal from time to time. In work now in progress on cattle that have not yet been sent south, two supply animals have been used, one a Texan cow that has been north since the summer of 1896, but has been kept on infected grounds the past two summers; the other a Northern cow that was inoculated during the past winter and suffered from an acute attack of the fever, but recovered and has carried ticks during the summer and fall without apparent illness. An equal number of cattle have been inoculated from these two supply animals. More severe symptoms have been caused by the blood of the recovered native. This was probably due to the fact that this animal was more grossly invested with ticks during the latter part of the summer and fall than the Texan, and was well infested at the time the blood was used. Blood from the same supply animal was used in midsummer, in doses of 2 to 6 cc. on a few cheap experiment animals without showing as severe symptoms as appeared in others inoculated in the fall with doses of 1 to 3 cc. after the supply animal had become grossly infested with ticks. It is probable that the safest supply animal is one that is thoroughly immune, and in which great variations in virulence of the blood is avoided by keeping free from ticks. The supply animal should be at the place where the inoculations are made and the blood should be used when perfectly fresh.

Size of Dose.—The size of the dose will depend largely upon the degree of virulence of the blood used. If the blood of a tick-infested animal is used, doses of from 1 to 2.5 cc. appear to be sufficiently large. Severe attacks of fever have been produced by the use of 1 cc. of blood from an animal grossly infested with ticks. As the susceptibility of animals varies greatly, it is prudent to give a small initial dose and repeat if necessary. In the Bullock and Rhea inoculations, pages 19, 21, large quantities were given, because the blood could not be used for a day or so after being drawn; and in these cases an antiseptic was added to prevent decomposition; and no doubt many of the Texas fever germs were destroyed.

Diet.—It is important that the inoculated animal should be well nourished, during the inoculation fever and subsequently, since there is a great lowering of the vitality of the animal, due to destruction of the red blood corpuscles. In the experiments at the North, the food has consisted of oats, bran, crushed corn, linseed meal, timothy and clover hay; corn being withheld during the acute stage of the fever. The effort is made to feed in a manner that will maintain a lax condition of the bowels, since the elimination of waste products from the liver is mainly through the bowels. Under the heading of "Inoculation in the South" is given suggestions as to appropriate feeding in that section.

Season of the Year.—Inoculations have been made successfully at all seasons of the year. In the North in midsummer, fall and winter. In the South, in winter and early spring. The most suitable time is at seasons when the animal does not suffer either from extreme heat or cold. If inoculated in the winter the cattle must be well sheltered, as the thinning of the blood resulting from the inoculation fever makes them less resistant to cold. Cattle inoculated in the north should be sent south in December or January, to prevent sudden gross infestation with ticks, as this may bring on a relapse.

Inoculation in the South.—Cattle may be safely inoculated in the South, if they are kept free from the fever ticks until well recovered from the inoculation fever, say about 60 days. This is best done in the winter after several severe frosts. In Texas, this would be about January 1st, as a rule. A suitable place should be prepared some months previously to receive and hold such cattle. To do this, the best plan seems to be to enclose a small pasture the previous June or July and allow no Texas cattle on it after that time. About December 1st, burn off the grass. Very few ticks will survive such measures. Suitable sheds for shelter against storms should be provided. The cattle should be put in the above described enclosure immediately on their arrival, and allowed some time to recover from the effects of their journey; say ten or fifteen days, before

being inoculated. They will require some time to adjust themselves to a new diet. It will be seen from the "College Station" experiment, page 44, that this may be done gradually without any marked digestive disturbance. With proper care they become accustomed in a few weeks to eating cotton seed hulls and a mixture of bran, oats and cotton seed meal. They should not have free access to cotton seed in large quantities, as this causes a very troublesome diarrhoea in some calves. In many parts of the State the cactus is abundant. This is a very suitable food for cattle during the inoculation fever, as it contains a mucilaginous substance which has a laxative effect. If this be not available, a few acres planted in oats furnishes an excellent winter pasture.

Relapses.—A few deaths occurred four or five months after the cattle were exposed to infected grounds. In the Green herd ten head died. Among the Tod bulls, two of the oldest animals died, and another of the large ones was sick. A few of the smaller ones were a little off. Both of the Waskom two-year-old bulls were sick, but recovered.

All of the bulls had ripened a few ticks without showing any fever. The Tod bulls had been well infested, but at the time of death were carrying only a few ticks. It appears that in the Green herd a number of the calves did not pick up many ticks until well along in the summer, when they became grossly infested. In this case, the long interval between inoculation and gross infestation may account for the result. An additional inoculation or several mild tick infestations earlier in the season might have given the necessary stimulation to effect immunity. In this case it is not known whether the bulls that died had reacted well from the inoculation, as individual records of this lot were not made.

In the case of the Tod and Waskom bulls, the owners think that the relapses were preventable. Capt. Tod says: "I have now no doubt but over excitement, over service, and over heating, aggravated by fighting a good deal, was the cause of their succumbing," and that this result could have been avoided by

putting these bulls with a restricted number of cows, each in a small pasture where they would not have had the trying conditions of worrying with other bulls. "Three others that showed signs of relapse were taken away from the cows for ten days or more and nursed up, then turned back to service. They have been well ever since." These relapses show that it probably requires a full season at the south before northern bulls acquire that degree of immunity possessed by Southern raised animals. Care should therefore be taken during the first season to avoid all conditions that tend to lessen the vitality of the animal. With proper care but few bulls that have reacted from the inoculation will die, and they will usually give good service.

Effects on Reproduction.—No evil effects of inoculation on the powers of reproduction have been observed in these experiments.

Bullock.—"The bulls have done good service."

Rhea.—"All the heifers," first inoculated, "produced good healthy calves the following spring and another lot appear to be pregnant five months after inoculation."

Tod.—"The bulls have done good service. I estimate that they have sired 200 calves."



FIG. II.—HEREFORD BULLS FROM 8 TO 12 MONTHS OLD, INOCULATED AT THE MISSOURI EXPERIMENT STATION AND EXPOSED TO THE FEVER IN TEXAS ONE YEAR. NO LOSSES.

Waskom.—Bulls run daily with cows and are doing service.

College Station.—All the heifers appear to be pregnant.

Kruger.—The oldest heifer produced a good calf 9 months after inoculation.

We have but little data as to the dangers of abortion following inoculation. Only one case has occurred in our experiments. This one in a Hereford heifer recently inoculated at the Missouri Experiment Station. On this point Dr. J. S. Hunt (Pathologist to the Department of Agriculture, Queensland, in Annual Report for 1897-98, page 87), says: "The risk is greater in cows that are in calf; abortion frequently follows inoculation when considerable fever occurs."

DOUBLE NEURECTOMY FOR SPAVIN.

BY ADOLPH EICHHORN, D. V. S., HOUSE SURGEON, AMERICAN VETERINARY HOSPITAL, NEW YORK.

There is hardly a veterinarian who has not met cases of lameness caused by bony spavins, which resisted the most heroic treatment, beginning with a liniment, followed by blistering, firing and blistering, or even the perforating iron, and being in every way unsatisfactory to both owner and veterinarian. For the last few months foreign veterinary literature has contained many articles, reports and results of an operation called the "Double Neurectomy for Spavin," and in which I took a great deal of interest. Speaking about it to several veterinarians, I have been requested to describe this operation, which was introduced by Prof. Bosi, of the Bologna Veterinary School, and whose successes surprised the profession.

The operation of neurectomy in veterinary surgery is by far of much greater importance than in human surgery, for in the latter this operation is only in very rare instances indicated, as in cases of neuralgia. But in the horse the indications are much more numerous; taking in consideration the chronic incurable diseased conditions of the bones, ligaments, tendons and joints of the lower extremities, which, by producing continual pain, interfere with the usefulness of the animal.

The "Double Neurectomy for Spavin," as has been reported by veterinarians of foreign countries, has been successful in about 90% of cases, where all other treatment failed. This evidence ought to be enough to consider it worthy of a trial, and to make ourselves acquainted with the operation, which requires some skill and practice, but which will not prove an obstacle, as this is a gift to many of our American colleagues. It is certainly advisable to try this operation on cadavers, thereby getting the exact course of the nerves, and enabling ourselves to be able to make as small an incision as possible on the living subject.

After long and tedious investigations, Bosi came to the conclusion that the deep branch of the "nervous peroneus" plays an important part in the innervation of the hock joint, and this makes the conceivably bad results, following the tibial neurectomy alone. The operation, as Bosi recommends it, consists in the neurectomy of the nervous tibialis and the nervous peroneus at the same time, which, as he claims, will be followed by complete recovery in all cases of spavin, even in the most pronounced types, in a comparatively short time.

I will try to give a clear and brief description of this operation, referring to Major Schwendimann's article on this subject in the *Schweizer Archiv für Thierheilrunde*, and which I will follow in both modes of operation and treatment.

Modus operandi.—The horse is laid on the side on which the operation is to be performed, and the upper hind leg is drawn forward and secured to the corresponding front leg. The field of operation is then thoroughly washed with soap and water, disinfected and carefully shaved. After the animal is completely under anaesthesia, and a strong ligature applied around the leg, the operation for the neurectomy of the nervous tibialis may be begun. This large nerve is easily found on the inner side of the leg, about one hand from the point of the hock, and 3 cm. from the tendo-Achilles. It lies right under the terminal branch of the saphena artery and the plantar vein, imbedded in a loose fat cushion. An excellent point to be

used in finding this nerve is the named extended vein, which is often caught by the blunt hook, and under which it is then easy to get the nerve, and by separating the loose tissue with the aid of two forceps, all that is left to do is to pick up the nerve with a blunt hook and enucleate a piece of 2-3 cm. with the aid of a pair of curved scissors. The blood is then pressed out, the wound closed by sutures, and covered with cotton.

The irrigation or washing of the wound with disinfectants and especially the use of powders is to be avoided, as this measure will only destroy all hope of healing by first intention. After this is done the animal is turned on the other side; the new field of operation cleaned and disinfected as before; the ligature removed, as it is of no benefit here, and is annoying to the operator. Following this procedure we go on with the operation to perform neurectomy on the deep branch of the nervous peroneus. This nerve is situated on the lateral side of the leg and is to be looked for at the same height with the nervous tibialis. The fine nerve lies here between the long extensor of the foot (musc. extensor dig. longus) and the lateral extensor of the foot (musc. peroneus longus), right over the musc. tibialis anticus. According to the anatomical situation of the nerve, we make the incision on the posterior border of the long extensor of the foot, about three inches in length, and after the separation of the strong fascia the bulging muscle is reached, which is grasped by a strong retractor, pulled downwards and outwards, the loose connective tissue then separated with the aid of a scalpel or forceps, after which the fine, white thread-like nerve makes its appearance. After performing the neurectomy on this nerve, the skin is sutured and the wound is to be covered loosely with cotton. This should be left alone for about 30 minutes, after which the blood should be pressed out and the wound rubbed with airol paste:

R. Airol,
Glycerini,
Mucilag. gum arab., 5.00,
Boli, 10.00,
M. Unguentum.

The use of the ointment is not advisable immediately after the closing of the wound, as it would burst, due to the oozing of the blood, and therefore not proving satisfactory for the purpose.

Major Schwendimann obtained with this treatment in the last ten cases healing by first intention, an object for which effort should be made under all conditions, as otherwise the healing process is considerably retarded by the formation of a muscular hernia with exuberant granulations. Also, it is not advisable, and still more harmful as is practiced by many, to trot the horse as soon as the operation is over, to prove the disappearance of the lameness. The symptoms in the first 10 to 14 days are not very encouraging, as often considerable lameness follows the operation, similar to those which are due to severe punctured wounds of the foot, and beside this, symptoms of paralysis of the extensors make their appearance, which is characterized by frequent knuckling of the fetlock. But all these symptoms disappear after the healing of the wound by first intention. This, as a general rule, takes place at the end of the third week, when slight exercise may be given, or the horse may be used for light work. After the fourth week, generally, the lameness disappears entirely.

Major Schwendimann reports 15 cases in which he performed the operation of double neurectomy, five of which were private cases, while the rest belonged to the Swiss army, and in all his cases he had a good opportunity to observe the results, which were in fact very satisfactory. Of the 15 horses operated upon, 14 were entirely relieved from lameness without being followed by any bad results. In the one unsatisfactory case, he thinks it was due to the condition in which the operation was performed, as the nervous tibialis was severed below the bifurcation, whereby only one branch was separated. As the horses were under observation for a considerable length of time, no bad results could be detected in any way, and as the horses were used continually for hard and tedious work in the manœuvres, it proves the success of this operation.

Analogous to these reports are those of Prof. J. Hirzel, of

Zurich, which are very satisfactory in regard to curing the lameness from spavin. He reports 26 cases, of which 24 were successful.

Conclusions.—These results, combined with many other satisfactory reports that have been published in different journals, prove the operation as a worthy remedy, especially in cases of spavin where all other treatment proves unsuccessful.

It is certainly essential to observe a liable sequel to this operation, as it is not excluded—that after the lapse of a certain time, trophic disturbances may make their appearance; further, it is questionable, as to the leg, if this condition will not cause an atrophy, and thereby weakening it in a certain way, which after hard work would cause interference, with its bad results. But Schwendimann and Fröhner state they could never observe anything of this kind.

But while these reports have been proven to be so successful, it is only advisable to resort to this operation when all the other treatment fails. There is among veterinarians a certain amount of prejudice in regard to neurectomy, so that all good suggestions and advice in regard to them are not considered to be of any value. But when we think that to-day, the first and general indication for treatment is the economic suitability, we have and we ought to consider the neurectomies as the most valuable operation in the line of veterinary surgery.

There being two cases in the American Veterinary Hospital at the present time upon which this operation will be performed, it will give me great pleasure to report the results in minute detail to the readers of the REVIEW, to prove the value of this operation.

ELECTROLYSIS.

BY DR. J. J. DRASKY, CRETE, NEB.

Read before the Nebraska State Veterinary Medical Association, February, 1900.

The subject assigned me is one that requires a paper of some length, and therefore I hope you will bear with me if it becomes monotonous.

Before I begin I wish it understood that I do not claim originality for all I will say, as I am indebted for most herein contained to Dr. John Butler, a gentleman who is recognized authority. In order to make things comprehensible I am compelled to quote a short chapter out of his text-book and then I will try and give you the results of my experience in electrolysis.

In my paper some years ago I attempted to bring the use of electricity before the veterinary profession, but as yet I have heard of no one having made use of it.

Dr. Butler says that : "When two or more needles connected with the poles of an apparatus generating a galvanic current of sufficient intensity to overcome the resistance of the circuit are inserted into living animal tissue, the following results take place, viz., the blood vessels of the part become dilated and engorged, producing intense hyperæmia, and the absorbents are stimulated to increased activity. In short applications with weak currents the effect ends here, but should the action of the current be continued, and the tension and quantity slightly increased, the albumen of the part becomes coagulated and with a still stronger current the water of the tissues becomes decomposed, the oxygen becomes attracted towards the positive pole, and the hydrogen towards the negative to find vent, at which it bubbles violently through the intervening structures, tearing fibre of muscle, separating cells, nuclei and filaments, etc., and mechanically destroying anything that may oppose its egress. The salts of the tissues are resolved into their contained acids and alkalies, the acids forming around the positive pole, and the alkalies around the negative, where both act as powerful escharotics, producing sloughing. Thus, the tissue acted upon is made to destroy itself through its own contained pigments. The operation thus described may practically be divided into four stages :

" 1st. The dynamic or absorbent stage, corresponding in what is called by Remak electro-catalysis.

" 2d. The coagulating stage.

" 3d. The escharotic stage, or the stage of complete and ultimate electrolysis. We use the first stage only in the treatment of serous effusions, strictures, watery cysts, etc. The second stage in the treatment of aneurism, varicose veins, haemorrhoids, nævus, and other diseases where coagulation of the contained blood is desired, and where the production of the slough is not intended ; the third and fourth stages in growths of a malignant nature, fibrous tumors, polypi, fatty tumors, and in any case where a total or partial destruction of the part may be necessary. In the operation the greatest amount of effect produced is in the immediate vicinity of the needles ; in very mild currents the cauterizing effect is only produced in the parts directly in contact with the needles ; with strong currents, the size of the slough depends upon the structure of the tissue, the amount of water and salts it contains, the size of the needle, and the duration of the application. The eschar, produced by the positive pole, differs essentially from that caused by the negative inasmuch as the ulcer resulting from the separation of the slough of the first leaves a cicatrix which heals by contraction, like that produced by an acid caustic. No such results take place from the action of the negative pole ; on the contrary, the cicatrix is soft and pliable.

" It is, of course, entirely impossible to obtain purely the results of any one of these stages *per se* ; for instance, in electro-puncture of an ovarian cyst, the result aimed at is to produce absorption, and so act on the internal part of the cyst as to destroy its secreting powers and to prevent refilling. Electrolysis of the watery parts of the contents must and does take place in a greater or less degree, but it forms no part of the desired effect, and so in operating upon aneurism, or nævus, thorough coagulation of the blood is the only thing desired. Electro-puncture as thus described, is presumed to have been performed with needles made of nonoxidizable materials. Should the needle of the positive pole be made of materials capable of being acted upon by the acids set free at this point, the results are modified in a great degree. For example, suppose the posi-

tive needle should be made of iron, the needle becomes dissolved by the acids set free, and the phosphate, sulphate, and chloride of iron are formed, principally the chloride. From this fact we would infer that iron needles would be useful when coagulation of the blood is the result aimed at, and there is no doubt they assist the accomplishment of such a result to a considerable extent. Suppose we use zinc needles, we have chloride of zinc formed, which is a powerful escharotic, and assists materially in hastening the destruction of morbid growths. I have used these needles with a weak galvanic current and long applications, for the destruction of malignant tumors, and believe it to be in many cases the most appropriate treatment. The diseased tissue is chemically dissolved under the action of the current, which at the same time influences the morbid nervous impulse which caused the secretion of the mistaken cells in the first place, and the electro-chemical action of the already disintegrating structure on the needle forms, molecule by molecule, one of the most powerful escharotics, which destroys, molecule by molecule, any of the diseased mass that may possibly escape the action of the current, and not only that, but it acts as a powerful antiseptic on the slough that otherwise might become offensive before separation had time to take place, and still further it certainly hastens the separation. Another advantage of the operation is that it is comparatively painless, in some cases entirely so; electrolysis of the tissue takes place so slowly that the chloride of zinc is also formed slowly, and immediately uniting with the tissue that is already half numbed by the action of the current, very little pain if any is produced. In fact the strength of the current can be so arranged that no pain is caused. In my opinion, the electro-chemical treatment far surpasses ordinary electrolysis in certain cases, where total destruction of the part, in as short a time as possible, and with a minimum amount of pain, is desired; still a slight eschar around the uninsulated part of the needle is unavoidable.

"In such operation it behooves us to make this latter as slight as possible, which can be done by diminishing the

amount or quantity of current used ; that is to say, in any operation requiring a cauterizing effect a large quantity is required ; in operations where we simply desire to produce the absorbent or electro-catalytic effect, we require tension but small quantity.

" We will, for the present, dismiss this question of electro-chemical treatment, and return once more to the consideration of the effects of the current as applied with unoxidizable material.

" So far we have considered this operation only as performed by the use of needles introduced into the tissues. The same effect in a lesser degree can be obtained by external application of metallic and other rheophores to the skin, mucous membrane, or denuded tissue. And when we use the current for the sake of its lesser effects, it is frequently applied in this manner.

" One of the greatest difficulties in the technique of electrolysis, so called, by the tyro electro-therapeutists, is to avoid doing too much. The operator must have a battery provided with a Brenner's, or other equally accurate rheostat, constant and reliable, capable of giving every variation of quantity and intensity of current. He must be quite familiar with its action, and with the effect each vibration is capable of producing on living animal tissue. He must also be able to control the electro-motive force to the exact point capable of producing the effect desired, and no more. For instance, what could be more deplorable than that sloughing of the milk duct should take place when the effect intended to be produced is merely the absorption of a stricture, or in operating on a nævus on the face of a young lady, that an eschar should be caused when we merely aim at coagulation of the morbid growth ? And yet the slightest overstepping of a scarcely defined boundary will cause just such a result. Better by far to do too little than too much. It is impossible to state with precision the exact quantity and intensity of current to be used, as that depends upon the size of the growth, the density, and the amount of the watery and saline ingredients contained. This must be learned entirely by

experience. We will first take up stricture of the milk duct for consideration.

"In the treatment of stricture of the milk duct the object in view is the stimulation of the absorbents to such an extent, that the fibrous tissue may be absorbed. We must be very careful, therefore, that the current be rather too weak than too strong.

"The *modus operandi* is as follows : We introduce into the milk duct an olive made of platinum or silver, or copper platinum preferred, at its posterior extremity a knitting needle is attached, this needle is insulated throughout its whole extent, leaving only the olive exposed. It is desirable that three olives of various sizes be at hand, first introducing the smallest of the three and when a sufficient amount of the stricture is absorbed, the next size is introduced and so on.

"It usually requires from three to five applications before the stricture is completely removed. It is well to remember that too much tension is productive of harm and therefore the necessity of different sized olives. In order to operate, cast and secure the animal firmly, attach to the negative pole the electrode at which end the olive is attached ; the positive pole has a broad sponge rheophore attached to it which is moistened with salt and water, and may be placed on any portion of the body. The electrode from the negative pole is then soaped, not oiled (oil being a non-conductor), to facilitate its introduction. The broad sponge rheophore being in position, you proceed to introduce the olive and very gently pass it up the duct until you have reached the obstruction. Here you stop and hold the olive in contact with the stricture, and in time you will find that the channel has dilated and you are able to pass through without any apparent resistance. It must be remembered that the current must not be too strong. In a paper written by me some years ago you will notice that I have advocated a current of a seven cell battery, this, however, I find is no criterion to go by, for the age of the fluid greatly influences the strength of the current ; the best way to determine the desired strength is

to apply the olive to the tongue, and if a slight tingling sensation be felt, I would regard the strength sufficient, it matters not how many cell current be used."

Like most country practitioners, I am somewhat negligent in keeping record of my cases, but since Dr. Peters informed me last spring that I would be called upon by our association to read a paper of this character, I kept a record of the cases that came before me in the past summer. Out of twelve cases treated, five required but three applications of electricity; three were treated five times before a complete cure was effected; one case that was treated, I first operated on with a teatslitter (my battery not being in working condition). The stricture being in the superior portion of the duct, I thought maybe this would be sufficient, but to my disappointment I found that the irritation thus produced caused almost complete obliteration of the passage. Having my battery newly charged, I proceeded at once to operate, and here again another mistake was made, the current used was altogether too strong, and the case was rather aggravated than relieved. I noticed that on withdrawing the electrode a slight amount of blood was noticeable; the cow for some time had to be milked with a syphon. The next time I operated I used only a three-cell current; have now operated five times and after each operation a decided improvement is noticeable. Two other cases I have operated upon resulted in a complete failure, and post-mortem examination revealed extensive tuberculosis of the udders.

I hope that you will pardon me if I make my paper more elaborate and take up the treatment of new growths; my experience, however, is limited, but my good success justifies me in mentioning some of the interesting cases that I have treated.

New growths, if superficial, and a total and rapid destruction be desired, may be treated by what is termed the fourth stage of electro-puncture, or complete electrolysis, by which a slough of the entire growth is produced and left to separate. In such cases we may introduce a small insulated needle in several parts of the growth, using a very strong cur-

rent, possibly of thirty cells. I use also an electrode in the shape of the feather or flat electrode, similar to that used on the different thermo-cauteries. So far I have treated but three cases in this way, one was that of a jack, on the anterior portion of the hock joint, of which small new growths appeared, varying in size from the end of a lead pencil to the size of a dollar. I have removed these growths with a knife, treated the jack constitutionally and used all imaginable caustics, from arsenic down; anything but the desired effect was obtained. The next was that of a jinny, where the tumor, the size of a child's head, in the same locality, I removed and treated with actual cautery, without any avail. As the farmer seemed to have more faith and courage than myself, and would return periodically for me to repeat the old process, I became desperate and was ready to use anything that would kill or cure. I secured a battery of thirty-cell current; had the above described instruments made, and after removing a slight amount of the new growth I applied the electricity for thirty minutes; gave instructions that the jinny be returned in two weeks. Upon her return I found considerable slough, which I washed with peroxide of hydrogen, and found that the growth had diminished to a great extent. I reapplied the current, and after three operations the result was a complete cure. Thus encouraged, I at once proceeded to treat the hated jack, for at this time he had been two years under my care. I would succeed in healing the ulcers almost completely, when all at once they would become aggravated and spread to their former size. I had the jack brought in and proceeded at once, using the current of the same strength as used upon the jinny, at intervals of one week, and when he came back for the fifth application it was found that no further treatment was necessary. The third and the last case was that of grease in its grape stage. I applied the electricity, puncturing the grapes, and within a week's time I was able to remove most of the diseased tissue with scarcely any loss of blood. I then used the broad electrode in four different applications, after which the horse was cured and discharged.

OVARIOTOMY IN THE DOMESTIC ANIMALS.

PRESENTED TO CORNELL UNIVERSITY BY CHARLES HENRY JEWELL,
FOR THE DEGREE OF DOCTOR OF VETERINARY MEDICINE,
JUNE, 1900.

Under the Direction of W. L. Williams, Prof. of Surgery, at N. Y. State Veterinary College to whom acknowledgment for valuable assistance is given.

History.—Ovariotomy of domesticated animals is one of the oldest operations in veterinary surgery, it having been performed contemporaneously with the operation in women. Ovariotomy in both is described by ancient writers, also by modern authors. It is mentioned by Aristotle (4th century B. C.), Varro (1st century B. C.) and Pliny (1st century A. D.). Nothing was written or done in this line during the middle ages. The more modern writings on this subject date back to the 17th century, when Bartholdi in 1662 speaks of spaying mares and cows through the flank, which operation was then of frequent occurrence in Denmark. The operation in women was revived by Morand, a Frenchman, in 1697, who was then secretary of the Paris Academy of Surgery. At the beginning of the present century ovariotomy in both was revived on the European continent, and the operation in women was introduced in America by Dr. Ephraim McDowell, of Danville, Kentucky. Dr. Nathan Smith, who like Dr. McDowell, had studied at Edinburgh, and not knowing of the operations of the former, also successfully operated in 1821, but the operation did not obtain general recognition until 1824, when a paper was published by Dr. Luzers in the Edinburgh *Medical and Surgical Journal*. Thomas Winn, a Louisiana farmer, in 1813 was the first in America to perform ovariotomy in the domestic animals. He endeavored to demonstrate the influence of ovariotomy on the increase of milk secretion by spaying several of his cows through the flank. The operation was not considered successful until Charlier in 1850 introduced his vaginal method, for which he devised certain complicated instruments which he deemed desirable. Colin in 1858 simplified this method by showing that Charlier's vaginal dilator was unnecessary.

The results of Winn and others of spaying through the flank made little impression on veterinary surgery; but since the introduction of the vaginal method the operation has become well established. At one time the operation was considered very dangerous to both mare and cow, owing to the extreme sensitiveness of the peritoneum to infection, but since the era of antisepsis, abdominal operations are made feasible with but little fear for the welfare of the patient. Experience has taught us that the sensibility of the peritoneum is not of such importance as was formerly believed if strict asepsis is observed in penetrating the cavity.

Object.—The object of spaying varies with species or strains; for instance, in the mare the operation would be indicated in those which have an abnormal desire for the male, seemingly irresistible. Such are called nymphomaniacs. They are very irritable during the periods of oestrus, which are frequent, excessive and prolonged. When approached, such animals lay back their ears, switch their tails, and spasmodically eject small quantities of light colored, slimy urine; they stamp their feet, rub their hind quarters against the stall, attempt to bite, strike, kick, and when hitched will often refuse to do the work demanded. Many have the habit of catching the rein beneath the tail and holding it firmly. When served by the stallion they generally fail to breed. They are, as a rule, in poor condition, and prove a source of annoyance to their owners.

The object of the operation in cows is, first, in case of the nymphomaniac, which is a great source of annoyance in the herd, by jumping others, breaking out of enclosures, producing but little milk and seldom becoming pregnant, also maintaining a lean condition. Secondly, it is asserted that the operation will not only increase the quantity of milk, but the quality as well. Third, the effect on beef production is very marked, the animal taking on fat in increased amount and well diffused throughout the tissues. The beef is said to equal that of a steer. While such are being prepared for the slaughter, a good flow of milk will be maintained, making it doubly profitable in

fattening such animals, which owners are desirous of selling at a gain. They may be milked until fit for the slaughter, and at the same time be allowed to run at pasture in company with the male without danger of becoming pregnant, which is often desirable to avoid.

It is of value in the sow, owing to the increased fattening quality of such. It is a well-known fact that sows which are in "heat" take on fat slowly, owing to the excitability of the animal at such periods.

Bitches subjected to the operation make more intelligent and docile animals, and the owner is not subjected to the annoyance of the "rutting" season. The animals remain at home and are more attentive to duties, thereby reducing the losses to sheep owners, caused by roaming dogs.

Cats after operating become more docile, grow larger and are not inclined to roaming from home.

Time and Conditions Favorable to Operating.—The mare should not be in foal, nor infected with any contagious disease, or inflammatory disorder, especially of the intestines. Dairy cows should be operated upon after fourth or fifth calving, if desirous of milking for a considerable length of time. She should not be pregnant, nor suffering from any infectious disorder, and the milk secretion should be at full height. It is better that all animals be prepared for the operation by withholding full rations the day previous and not feeding on the day of spaying.

Surgical Anatomy.—The vagina is situated in the pelvic cavity with the rectum above and bladder below. Its internal surface presents longitudinal folds which permit free dilatation; at its anterior extremity is situated the cervix of the uterus, giving to the fingers the sensation of a hard and firm projection, in the centre of which is a small opening generally impenetrable by the finger, in the cow, and radiating from this are the folds of the mucous membrane. The uterus continuing forward from the cervix, is situated in the sub-lumbar region with its posterior extremity at the inlet of the pelvic cavity;

its body is short and divides anteriorly into two cornu or horns. In the mare these pass outwards at right angles toward the flank, and in the cow forward, downwards and backwards. In both they are connected to the ovary by the utero-ovarian ligament and communicate with the ovary by the fallopian tubes and fimbria. The uterus and cornua give attachment to the broad ligaments, which are folds of the peritoneum, originating from the lumbar region and descending toward the uterus to fix themselves upon the sides of the superior face of the body and cornua in the mare and to the sides of the inferior face in the cow.

The anterior borders of the ligaments are free and give support to the oviducts and ovaries. Between its layers are the utero-ovarian artery and vein, lymph-vessels and nerves, which pass to and from the ovary. The ovaries, two small ovoid bodies, are situated on the superior internal face of the broad ligament in the mare, and the inferior internal face in the cow. The round ligament, which often aids in locating the ovary, springs from the inguinal canal and passes to the cornu, attaching itself near the extremity. This is round, hard and fibrous, corresponding to the gubernaculum testis of the male. In the smaller animals the vagina is of no special importance to the operation, only aiding in locating the cornua. The cornua in the bitch and cat are long, slender and straight, extending from the anterior entrance of the pelvis along the sub-lumbar region to which they are suspended by the broad ligaments. In the pig the uterine cornua are long and tortuous, extending from the anterior entrance of the pelvic cavity a short distance forward, and are suspended from the sub-lumbar region by the broad ligament. They float among and resemble the small intestines.

Modes of Operating.—In the cow and mare spaying is done almost exclusively through the vagina. Young heifers would necessarily have to be spayed by the flank method owing to the small size of the vagina. Bitches, cats and pigs should be operated on through the flank or median line; the danger of

hernia being greater in the latter manner, unless great precaution be taken in suturing the abdominal parietes.

Necessary Instruments and Their Preparation.—For the mare a long ecraseur, preferably worked by a spring and ratchet (Chassaignac's), a knife with a metallic handle and concealed blade, and it is well to have a uterine dilator, although not often necessary. For the cow the uterine dilator, pair of long curved scissors and a metallic handle knife with concealed blade. For the bitch, cat and pig a scalpel, artery forceps for emergency, needle and suturing material (silk or catgut) are required.

All instruments should be subjected to twenty minutes boiling in water to which sodi bicarbonate has been added.

Methods of Securing Animals for Operating.—The cow may be fastened in a narrow stall or stocks, if such be convenient. A rudely prepared stocks will suffice, which any novice can build. The animal should be secured firmly and straps or boards placed beneath the abdomen and thorax to prevent lying down; it is well to have the hind legs secured to guard against kicking, should have a strap or rope drawn tightly over the back to prevent arching and straining. The mare should be confined in the stocks with strap over the back, two underneath, one beneath the thorax and the other under the abdomen. Each foot should be securely fastened with ropes, the tail drawn tightly and secured above the croup and have an assistant hold a twitch upon the animal's nose.

The securing of the smaller animals is simple. Place the animal outstretched upon an inclined surface with the side upward on which the incision is to be made, the mouth being previously muzzled if a dog or cat. The legs should be secured with small ropes and fully extended. An assistant should hold the animal firmly.

Preparation of the Operating Field.—Immediately prior to the operation the rectum should be evacuated, if the animal be a cow or mare, and the external genitals and surrounding parts thoroughly washed with soap and water; then disinfect the

same with some reliable agent. The vagina should be washed out thoroughly with boiled normal salt solution (.6 per cent.), cooled to a temperature of 100°F. The smaller animals are prepared by thoroughly washing the operating field, which is the flank or median line directly in front of the pubis; this done the part is shaved and disinfected.

Precautions of the Operator in Regard to the Arms, Hands and Clothing.—The hands of the operator should be scrupulously clean, finger nails short and arms thoroughly disinfected. Too much stress can not be laid on strict asepsis in all operations pertaining to the abdominal cavity, for on this depends the results. The operator's suit should be of some light easily washed material and strictly clean.

The Operation in the Cow.—First introduce the right hand carrying the knife, then with the left introduce the vaginal dilator, placing the small anterior projection into the os, press downwards and forward until the walls of the vagina are tense, then with the right hand locate the cervix. Choose a place about two inches back and above in the median line, then expose the knife, place the edge upward, and make a drawing cut about two inches in length and deep enough to pass entirely through the vaginal walls, remove the knife and dilator, pass the hand into the vagina, locate the incision and insert one or more fingers, locate the body and cornua, follow the latter to their extremities, and, coming to the broad ligaments, to which hanging freely we find the ovaries—two small, hard ovoid bodies about three-fourths to one and a quarter inches in length by one-half to three-fourths inches in diameter. The ovaries lie near the median line just in front of the brim of the pubis and a little below. Having secured the ovary draw it out through the incision into the vagina, then with the other hand introduce the curved scissors and clip off the organ, making sure to remove all the glandular structure. It is preferable to use the right hand for the left ovary and *vice versa*.

The Operation in the Mare.—In the mare the operator introduces the right hand into the vagina, determines the cervix

and locating a position in the median line immediately above the os, awaits an opportunity when the animal is not straining and the vagina becomes dilated before making the incision. After exposing the blade place the sharp edge upward and push directly forward parallel with the body of the uterus, making sure that the incision includes the muscular walls of the vagina and the overlying serous coat; remove the knife, pass one or more fingers through the opening and gradually enlarge it so as to pass the hand into the abdominal cavity. In case the vagina does not dilate, it is then desirable to introduce the vaginal dilator, place it in the cervix, push forward and downward and make the incision as described above.

After the opening is made pass the hand into the abdominal cavity, then locate the body of the uterus, trace it to the cornua, continue to the extremities of these, and there will be recognized the broad ligaments by which the ovaries are freely suspended, lying on either side well toward the flank. They are hard ovoid bodies about one and a half to two inches in length by one to one and a quarter inches in diameter, varying in different animals of the same species, being largest at the period of sexual maturity. Having located and determined the ovaries, the next step is the introduction of the ecraseur, and passing the chain over the organ, draw up the slack and with the free hand proceed to crush off the gland, in the meantime holding fast to the ovary which is being removed until it is safely brought to the exterior.

The second is secured and removed in the same manner. It is better to introduce the right hand with the instrument for the removal of the left ovary, and *vice versa* for the right, but both may be removed with the same hand.

The operation in the bitch and cat is alike. For the flank operation the animal is secured upon the right side on an inclining surface. The incision is made through the left flank from a point about one inch from the ventral border of the lumbar muscles and just in front of the external angle of the ilium, extending downward toward the median line about one and a half

inches, pass the knife through the muscles of the flank (the external and internal oblique) into the abdominal cavity. The opening should be large enough to freely admit one finger, which should be gently passed upwards and backwards along the abdominal walls until coming upon the horn of the uterus; secure this, draw it out through the opening, then trace it forward to the ovary, which can be determined by its ovoid glandular structure, tear it loose from the abdominal wall by means of the finger and bring it out through the incision. Then pick up the other cornua, and using gentle tension trace it to the ovary; when located tear it loose by catching it between the end of the finger and the abdominal wall, draw it out and tear away several inches of cornu with each ovary, replace any omentum or abdominal organs which may protrude, close the cutaneous wound with continuous catgut by suture and wash with sterilized water.

Should the animal be a young puppy it is desirable to operate through the median line, securing the ovaries in the same manner as by the flank. In operating in this way the abdominal muscles should always be sutured to prevent hernia, whereas in the flank it is only necessary to suture through the skin. In the cat it is advisable to suture both the abdominal muscles and the skin.

(*To be continued.*)

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

VOLVULUS.

By W. L. WEST, V.S., Belfast, Me.

June 21st I was called to see a thoroughbred Jersey heifer which the owner said was not quite right, presenting the following symptoms: Dull, decubitus; complete anorexia; pulse 100 and thready; temperature 100° F., and owner said he did not know of her having passed any faeces for 24 hours;

urine normal in color; but lessened in volume; not examined chemically. Diagnosis reserved. Treatment: Mag. sulph., 480, aqua, 1 litre, with enemas containing magnesia sulph., 60, every two hours.

June 22d—Pulse, 110; temperature, 100; decubitus; anorexia; drinks some; no pain; no tenderness on pressure; no tympanitis; no intestinal murmur. There was some dark, viscid, tarry blood exuding from the anus. Diagnosis, intestinal obstruction, probably volvulus. Prognosis, death.

June 23—Symptoms same; temperature, 100; no pain.

June 24—Symptoms same; temperature, 100; no pain.

June 25—Symptoms same; temperature, 100; no pain.

June 26—Animal died at 4 A.M., after the cervical muscles of one side had drawn the head around to that side.

Post-mortem (four hours after death).—Stomach full of undigested food and liquids, normal in appearance. Heart, lungs, liver and spleen normal. Kidneys slightly congested. A loop of the middle portion of the ilium had slipped through a hole in the mesentery and twisted upon itself, thus making a complete strangulation.

Now, this may be a very ordinary case to others, but there are a few things about it I would like explained. (1) Why did this animal have a persistent temperature of 100° F? (2) Why was there no pain or tympanitis? (3) What was the immediate cause of death?

We usually expect in acute inflammation a sharp rise in temperature, and I think the reason we did not have it in this case was due (1) to the toxines which were absorbed, inhibiting the heat producing centre. (2) The pain in intestinal inflammations is either due to chemical changes caused by the action of septic organisms or the products upon the nerves, or by pressure upon the nerve terminals by the distention due to fermentation. In this case I think the animal was nearly free from septic organisms, and gasogenic ones as well, hence no pain and no meteorism. (3) I think the direct cause of death was absorption of toxines generated by germs enabled to proliferate faster and undisturbed owing to the stasis caused by the strangulation.

RESULTS OF FOETAL DYSTOKIA.

By H. D. FENIMORE, D. V. S., Knoxville, Tenn.

Was called ten miles away to deliver a calf after all the neighborhood had exhausted their efforts on the case. Found

the calf in the anterior presentation with head turned back. The membranes had been broken twenty hours before and the vagina was dry and inflamed. Succeeded in straightening the head and delivering the calf. Washed out the uterus with antiseptic solution, gave a stimulant, and left the cow apparently in good condition. About four months later I was called to the same place to see a large Jersey bull with nine inches of his penis hanging out with dry gangrene. I cast the bull and amputated the diseased portion. In trying to find out the cause of the bull's condition, they told me that the day before they first noticed it, he was trying to serve the cow that I took the calf from. I had the cow brought to me, and found that all that part of the vagina between the hymen and the os was entirely grown solid. I told the owner that the cow should be killed and buried, as the meat or milk was not fit to use, because of absorption of material from the uterus that could not escape. He turned her out in a woods where there was plenty to eat and drink, but she gradually wasted away and died about three months later. The bull could not extend the penis, and instead of the urine running down the sheath and out the natural opening, it formed a new opening nine inches further back. The sheath between the two openings became absorbed, the skin drew up smooth over the abdomen like a cow. The hairs at the natural opening became shorter and finer and those at the new opening became coarser and longer. He was slaughtered for beef in fine condition.

TRAUMATIC SECTION OF FLEXOR METATarsi MUSCLE—SUTURE
—RECOVERY.

By W. L. WEST, V.S., Belfast, Me.

Jan. 16, 1900, was called fourteen miles into the country to see a horse which had been injured by jumping onto a buck saw, the blade of which protruded in such a way (through the frame) that it made a skin wound in an oblique direction four inches above the hock joint, no more than an inch long, but which completely severed the flexor metatarsi muscle with no perceptible injury to adjacent structures.

I chloroformed the horse, shaved the parts, and enlarged the skin wound; drew the leg forward and irrigated the wound very thoroughly with 1 to 1000 bichloride solution. Meantime having had my instruments, sutures and bandages boiled, I sutured the tendon, muscles, fascia and skin separately; dusted the wound externally with iodoform sugar and applied muslin

bandage soaked in above solution ; put a strap on the foot to keep it forward, and complete recovery ensued.

PARTURIENT PARESIS BEFORE PARTURITION.

By H. D. FENIMORE, D. V. S., Knoxville, Tenn.

Having had a few such cases, will give the history of one, which is practically the same for all. Was called on Saturday evening to see a very valuable cow. Found her suffering with a very severe case of parturient paresis. She was lying flat on her side not able to raise her head. On examination I found the os dilated, but the foetal membranes were not broken. The calf was in normal position, but all labor had stopped. This serious state of affairs was all developed very quickly. One hour before the cow was seen walking around apparently in good condition. I delivered the calf without any trouble. The membranes were adherent, so I did not attempt to loosen them, preferring to wait until next day. I gave her the iodide of potassium treatment and left her in charge of an attendant for the night. On Sunday morning I was telephoned to come early ; found her able to sit up on her breast and hold her head up, but with a complete case of prolapsus of the uterus, and very much swollen. I took off the foetal membranes, cleaned up the uterus, and replaced it with great difficulty owing to its size and the recumbent position of the animal. Fastened it in with stitches in the vulva, as described by Dr. Bridge. Gave a second treatment of iodide of potassium and a pint and a half of linseed oil and two ounces of turpentine. On Monday morning she was up doing well.

In all the cases I have seen of parturient paresis before parturition, the calf has been in normal position and very easy to deliver, and could have been easily expelled by the mother had the disease not stopped labor. I also notice that these cases develop alarming symptoms very rapidly.

DEPARTMENT OF SURGERY.

BY L. A. AND E. MERILLAT,
of the McKillip Veterinary College, Chicago, Ill.

ABDOMINAL SURGERY.

II. WOUNDS OF THE ABDOMEN (*Concluded from page 291*).

I *Non-penetrating Wounds*.—This classification of wounds includes all those that do not penetrate into the peritoneal cavity, and vary from a simple division of the cutaneous structures

to that of all the structures that compose the walls but the peritoneum. These wounds are usually the result of accidents, such as have already been mentioned, and as a rule require surgical attention in order to obviate undesirable results which usually follow as a consequence of negligence on the part of the surgeon or the client. These wounds may be divided into two classes, viz. : (a) Simple Wounds, and (b) Complicated Wounds.

(a) *Simple Wounds.*—The simple non-penetrating wounds are those that consist of a division of the soft structures without the introduction of foreign bodies which may be introduced into it, either by the interception of substances, such as part of the harness, vehicle, blanket or any object that may accidentally come between the patient thus injured and the object which inflicted the wound, or by the retention of part of the object which may be broken off by the force of the blow as it entered the abdominal walls or while ejecting it from the walls. Simple wounds may have septic products introduced into them, but do not contain other foreign substances.

(b) *Complicated Wounds.*—The complicated non-penetrating wounds of the abdomen include all wounds that contain foreign substances which may be introduced as mentioned above. Considerable attention must be given to these wounds in order to ascertain the true condition ; the object that produced it must be carefully examined ; the position of the patient when injured should be ascertained ; and the condition that surrounded him at the time of the accident should be obtained from the coachman, driver or attendant ; to all of which the surgeon should add his own deductions to the information thus obtained, and "govern himself accordingly."

Treatment.—In treating these wounds the chief object in view should be to make it an aseptic wound that will heal as readily as a surgical wound, and the following course of treatment should be adopted, viz. :

1. Arrest all haemorrhage.
2. Cut away all tissues that are likely to become necrotic.
3. Clip the hair, and clean the part surrounding the wound.
4. Ascertain whether simple or complicated.
5. Treat according to indications.
6. Apply sutures, dressings and bandages required.

Always arrest all haemorrhage before attempting to do anything else ; to attempt to treat a wound while wading in blood is unsurgical, and should never be done under any circum-

stances. After the haemorrhage is arrested the wound should be relieved of all the lacerated tissues that are likely to never be reorganized. The hair surrounding the wound should be carefully clipped, and the surrounding skin thoroughly cleansed. The wound thus prepared may now be explored and its true condition ascertained; if a simple wound it must be irrigated with sterilized water, carefully sutured, dressed and bandaged; but if a complicated wound, all foreign bodies must be removed, the wound must then be well irrigated, sutured, dressed and bandaged. When drainage is necessary, an opening should be left at the lower part of the wound. Fomentations or cold packs should be used when indicated. If there are indications of sepsis the dressings should be removed and the wound must be thoroughly irrigated with water and if necessary antiseptic solutions may be used; the dressings and bandages should be replaced after the wound is cleaned, and supervised as necessity demands.

Penetrating Wounds of the Abdomen.—In domestic animals these wounds are usually caused with blunt or sharp pointed instruments, such as forks, bayonets, knives or horns; by falls upon pointed objects, such as plow points, bolts, harrows or spurs; by leaping over fences; by the bite of carnivorous animals, and gunshots. All wounds of this class should be considered serious, no matter how small and insignificant they may appear. A simple puncture is often more dangerous than a wound that first appears serious, such as those that are complicated with visceral injury. In most every instance these wounds are inflicted with objects that are not aseptic and need immediate attention. A simple insignificant appearing wound is often neglected, and as a matter of course is followed by infection, fistulæ and secondary abscesses which could have been prevented, had it received surgical attention at the proper time. It is necessary in all cases to ascertain the character of the wound and to give it the surgical attention indicated. The use of a probe should be avoided if the condition of the wound can be determined without. The appearance and condition of the object that produced the wound, will to a degree of certainty, indicate the character of it, and to some extent, the nature of infection likely to follow; but too much reliance should not be placed upon a condition guessed in this manner, for a fistula, an abscess or tetanus following the treatment of a wound of this character is avoidable and should therefore be prevented.

Penetrating Wounds that Divide the Peritoneum.—These wounds are the most simple ones included in this classification of abdominal wounds. The penetration of the peritoneal cavity may be revealed by the presence of the viscera or the protrusion of it into the wound ; or suspected by the amount of shock following the injury ; and sometimes by symptoms of peritonitis which follow soon after the accident, but in all events suspected perforation should be treated as if they actually existed. These wounds are more serious in herbivora than in carnivora or omnivora ; this being due to the tension of the abdominal walls caused by the large digestive organs common to them. In ruminants these wounds are not so serious as in non-ruminating herbivora, and all non-ruminating herbivora are solipeds, which are strong, active and muscular animals that are very susceptible to peritonitis and consequently abdominal wounds are more dangerous than in ruminants. This susceptibility is due to the activity and irritability of solipeds. The more active, nervous and irritable the animal the more susceptible it is to peritonitis following abdominal wounds, and the cause of susceptibility is the activity and irritability of the patient which retards or prevents cicatrization, and increases the danger of infection, and such infection is followed by an inflammation which extends to the peritoneum. The horse is the best developed representative of the family of solipeds and is therefore more susceptible to it than either the mule or ass as a consequence of the development of his muscular and nervous system.

Ruminants being of a different nervous temperament generally, are less susceptible to it, and therefore wounds of this character yield to treatment much better than in the horse.

The result following the treatment of these wounds depends to a great extent upon the prevention of infection, peritonitis and prolapse of the viscera. If asepsis can be obtained and continued, a recovery may be expected ; and even though pus exists as a natural consequence of faulty antisepsis, the early adoption of a more thorough antiseptic treatment may ward off peritonitis when conditions are apparently unfavorable for a good recovery.

Treatment.—The main object in treating abdominal wounds of this character is to prevent a prolapse of any part of the contents of the abdominal cavity, and to make the wound aseptic. All foreign substances and soft tissues that are lacerated and that may become necrotic must be removed ; all

haemorrhage must be arrested ; large blood vessels ligated and capillary haemorrhage checked by irrigating the wound with either hot or cold water before applying stitches or dressings. If it be necessary to cast the animal to ligate blood vessels, irrigate the wound, apply sutures or adjust dressings, special care must be taken not to injure or infect the wound, cause a prolapse and to protect it should one accidentally appear. In some cases it may be necessary to apply a temporary dressing to prevent additional injury. The administration of an anaesthetic may be necessary to keep the patient quiet while the wound is being repaired and the dressings adjusted. If the wound is large the peritoneum should be sutured with catgut and the muscles and skin with strong silk or linen thread. Quilled sutures may be used for the muscles and skin. The dressings may be oakum, cotton, or wool properly sterilized and held in position by improvised means. After the dressings have been adjusted the patient should be kept quiet until the wound is healed. If there is no marked elevation of temperature the dressing should not be removed until the sixth or seventh day, excepting when it becomes soiled or saturated with discharges from the wound.

Food should be given in small quantities and be nutritious and digestible. Water also must be given often and in small quantities.

If it becomes necessary to remove the dressings the wound should be irrigated and washed with antiseptics, but if no sign of sepsis is noticed it should be irrigated with sterile water only. There is but little danger of infection after the third or fourth day.

Abdominal Wounds with Prolapse of Viscera.—Abdominal wounds of this character are very dangerous generally in herbivora, but less so in carnivora ; but a prolapse in the viscera in either is usually considered a serious complication. The protrusion of any part of the anatomical structures or organs contained in the abdominal cavity would not be more serious than a penetrating wound without a prolapse, were it not for the danger of introducing septic products into the cavity in returning the prolapse, and for the difficulty of retaining its position when returned. In herbivorous animals a prolapse of the small intestines is more dangerous than that of any other part of the contents of the cavity, but in carnivora, however, one is as easily returned and retained in place as the other. In some cases when an omentum protrudes it may become ruptured or some

part of it may be removed in returning it, thus forming an opening through which the intestines may pass and form a hernia (*hernia interna abdominis*) which at times becomes strangulated. Frequent colics or intestinal occlusion following the return of an omental prolapse is very suggestive that something of that kind exists, but the true condition can only be ascertained by performing celiotomy and exploring the cavity; this, however, is not easily done in herbivorous animals, but in carnivora this procedure should not be overlooked when the indications demand such interference. An omental prolapse is generally not so serious as an intestinal or that of any other organ of the abdominal cavity. The mutilated part and all that is likely to become necrotic can easily be removed, but before returning it into the cavity it should be thoroughly cleansed and all haemorrhage arrested.

Treatment.—The first object in treating wounds of this character is to prevent the prolapse from being injured and infected. If the patient is a large animal and requires casting, a provisional dressing should be adjusted in such a way as to protect the prolapse during the procedure. The prolapse, wound and skin surrounding the wound, should be thoroughly cleansed, the prolapse returned into the cavity, the opening properly sutured, the required dressings carefully applied, and the bandages substantially adjusted. Should no indication of sepsis appear the dressing may be allowed to remain until the sixth or seventh day, or at least until the third or fourth, when the danger of infection is past. If the part of the intestines that formed the prolapse should become necrotic, a resection of the diseased portion is the only procedure that will increase the probabilities of recovery.

Abdominal Wounds Complicated with Visceral Injury.—These wounds are caused in the same manner as other abdominal wounds; the complication may be an injury to the stomach, intestines, liver, kidney, bladder, uterus or any other structure located in the abdominal cavity. The severity of the wound depends much upon the manner in which the wound was inflicted, the amount of damage done to the viscera, and the chances of infection. If the injury is within easy access the condition is but little worse than a prolapse, but if deep seated with several perforations, such as may be caused by a deep puncture, or a gunshot, the condition is very dangerous and usually fatal in herbivorous animals, but in carnivora the perforations can be as easily located as in man. In the horse or ox the

colon and cæcum is more often perforated than the small intestines, but in the dog the injury is about as common to one as the other. The colon and cæcum of herbivora is generally distended by aliment and gas, which gives it a more fixed position than in carnivora, while the small intestines are more empty, more motile and more difficult to perforate than either the colon or cæcum. Perforation of the stomach of the horse is more dangerous than in the ox or dog. Ruminants tolerate abdominal wounds much better than solipeds. Dogs yield to treatment of abdominal wounds much better than other domestic animals. Celiotomy is a simple operation; exploration of the abdominal cavity comparatively easy, and the surgical treatment of these injuries are generally successful in carnivorous animals, if the operative procedure is correct in every detail. When multiple perforations exist all must be sutured before the cavity is closed. The perforations may be detected by inflating the bowels with filtered air. This method of detect-

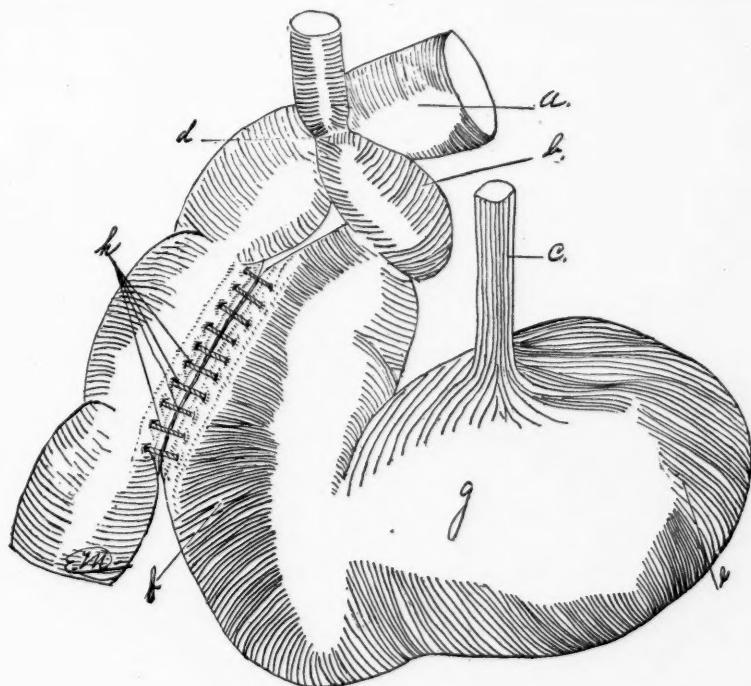


FIG. IO.

GASTRO-INTESTINAL ANASTOMOSIS.

A, portion of small intestine; *b*, pylorus; *c*, cesophagus; *d*, stricture; *e*, cardiac portion; *f*, pyloric portion; *g*, anterior surface.

ing perforations should always be adopted when gunshot wounds of the abdominal region require surgical interference, at least when the cavity is explored, for many of the perforations found in this way might otherwise be overlooked, and even though the surgical methods were otherwise correct, notwithstanding the oversight, nevertheless the failure would be preferred against the antisepsis.

Treatment.—The treatment consists of repairing the damage done to the bowels, stomach, uterus, kidney, bladder or other abdominal organs injured, adopting strict aseptic measures in every detail, and overlooking nothing that might cause an unfavorable termination. Perforations of the intestines should be sutured (*Enterorrhaphy*, Fig. 5, Vol. XXIV., No. 4, p. 280), and when all visible perforations have been sutured the intestines should be inflated in order to ascertain if any have been overlooked ; the cavity should be irrigated ; the wound thoroughly cleansed and the skin surrounding the wound should be well disinfected ; the wound properly sutured ; surgical dressings carefully applied and bandages securely adjusted.

Peristalsis must be arrested by the use of opiates, and the diatetic treatment as that following the treatment of other intestinal wounds. In large domestic animals the success in treatment of wounds of this description depends much upon the ingenuity of the surgeon in improvising methods to meet the demands of existing conditions, while in small animals a methodical procedure can more easily be followed, and every detail carefully observed. If a part of the intestines is badly mutilated the part so affected must be resected and the ends approximated (*Rev.*, Vol. XXIV., No. 3, Figs. 2 and 3, p. 213, and No. 4, Figs. 5, 6, 7 and 8, p. 283). If any portion of the intestinal tract is to be relieved of its function or part of it, a gastro-intestinal anastomosis (Fig. 10) ; a lateral anastomosis (Fig. 12) ; or the formation of an artificial anus (*enteroproctia*), are all operations that can be used for this purpose in their respective indications ; in fact, the course to be followed in such instances must be determined while the patient is on the table, and the simplest possible method adopted that will meet the demands or accomplish the purpose.

When the stomach of the horse is perforated the condition is generally dangerous, if the opening is large enough to allow the contents to pass into the cavity ; small punctures however often terminate favorably. In ruminants perforations of the stomach are not so serious as in the horse. Rumenotomy is an

operation that is followed with very flattering results. In the dog gastric wounds are accompanied with very alarming symptoms, but are not so serious as in the horse, and their surgical treatment is generally followed with very good results. Wounds of the uterus should be stitched with sterilized catgut thoroughly cleaned and replaced. Wounds of the kidneys are usually detected by the passage of bloody urine (*hematuresis*) and are generally serious complications. The only surgical treatment in such cases is an incision of the kidney (*nephrectomy*). When the bladder is perforated the urine escapes into the cavity. The flowing of urine from the abdomen through the external wound is an indication that the complication is a ruptured or punctured bladder. Anuria is another condition which is very suggestive in such instances. In large domestic animals such injuries are serious and generally terminate fatally; but in carnivora the ureters can be anastomosed with the rectum, which affords an exit for the urine through it and the anus.

Animals often die shortly after receiving wounds of this character, either from shock or internal haemorrhage. In every case the condition of the pulse and mucous membranes should be immediately ascertained, and if the indication points to internal haemorrhage the first step in the treatment of such cases is to arrest it; this being done the wound may be treated as the indication demands. In case of collapse from loss of blood transfusion or a subcutaneous injection of a normal salt solution (*hypodermoclysis*) should be used to stimulate the patient. The temperature of the solution should be above normal (110-115° F.).

Shock is another condition which should be carefully studied. In some cases it may be considered as nature's method of arresting haemorrhage, and an early action may be detrimental. Provisional work, or assistance of any kind that will not inflict pain but alleviate it, is decidedly the best procedure in some cases. To delay an operation, however, may be beneficial or injurious, and to decide whether to operate during profound shock or to wait for a reaction requires good judgment.

By exercising care and good judgment many of these abdominal wounds can be brought to a satisfactory termination; the management of these wounds and injuries requires a more thorough observance of the details of asepsis and antisepsis than other wounds; the main object in treating them is to convert them into surgical (*aseptic*) wounds, by cutting away the

lacerated and disorganized tissue under aseptic precautions, and bringing the edges of the thus formed aseptic wound in apposition in order to encourage primary union if possible.

Considerable attention should be given to drainage ; primary dressings should be applied so that free openings will afford an outlet for the wound discharges and at the same time exclude all pathogenic organisms from it.

ABDOMINAL OPERATIONS.

The operations that should be given a consideration in abdominal surgery of domestic animals may be divided into *primary* and *secondary*. The primary being those that are performed in order to enable the operator to give surgical attention to some part of the animal economy to which he cannot have access otherwise ; *e. g.*, tapping of the intestine or stomach cannot be accomplished without passing through the peritoneal cavity ; a resection or anastomosis of the intestine without opening the abdomen (*celiotomy*) ; herniotomia externa or interna without incising the hernia (*herniotomy*).

A secondary operation is one that requires some surgical interference before it can be undertaken. The importance of each of these abdominal operations will be considered according

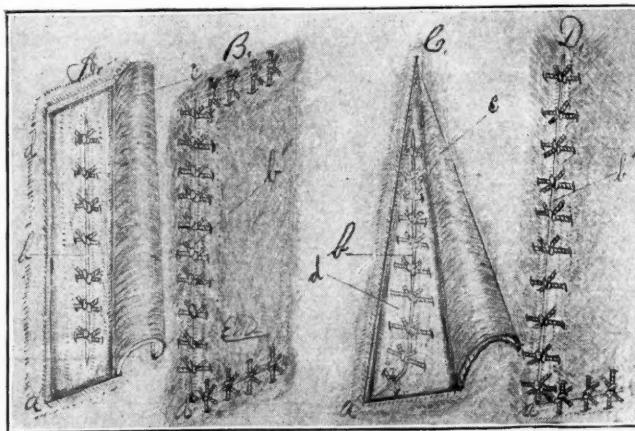


FIG. II.
ABDOMINAL INCISIONS.

- A*, rectangular cutaneous incision ; *a'*, inferior angle of incision ; *b*, muscular incision ; *c*, skin, subcutaneous tissue and panniculus carnosus ; *d*, abdominal muscles.
- B*, rectangular incision when sutured ; *a*, opening for drainage.
- C*, triangular incision ; *a'*, inferior angle of incision ; *b*, muscular incision ; *c*, skin, subcutaneous and panniculus carnosus folded back ; *d*, abdominal muscles.
- D*, triangular incision, sutured ; *a*, opening for drainage ; *b'*, cutaneous incision.

to their respective value, efficiency and significance, together with secondary operations belonging to each, and will be taken up in the following order, viz. :

- I. Celiotomy and Laparotomy.*
1. Gastro-intestinal anastomoses.
 2. Intestinal anastomoses.
 - (a) Lateral anastomesis.
 - (b) End-to-end anastomosis.
 3. Intestinal approximation.
 4. Enterotomy.
 5. Enterostomy.
 6. Enterorrhaphy.
 7. Gastrectomy.
 8. Gastrotomy.
 9. Rumenotomy.
 10. Gastrorrhaphy.
 11. Cæsarean section.
 12. Ovariectomy.
 13. Castration of cryptorchids.
 14. Hysterotomy.
 15. Hysterectomy.
 16. Hysterorrhaphy.
 17. Nephrectomy.
 18. Nephrorrhaphy.
 19. Ureterostomy.
 - (a) Uretero-ureterostomy.
 - (b) Uretero-rectostomy.
 20. Splenectomy.

II. Paracentesis.

1. Celiocentesis.
2. Enterocentesis.
3. Gastrocentesis.

III. Herniotomy.

1. Herniotomia externa.
2. Herniotomia interna.

I. Celiotomy, Laparotomy and Abdominal Section.—In a general way these terms refer to an incision made into the abdomen, an opening into the cavity. *Celiotomy* is a word composed of two parts, a Greek root and an affix. The root refers to the abdomen and the affix to an incision or opening, and means literally, a surgical opening of the abdomen or belly.

Laparotomy is composed of a Greek root referring to the flank or loin, and its literal significance relates to an opening

through these structures; therefore an opening at the linea alba, through the vagina or the inguinal canal is not a *laparotomy*, but a *celiotomy*. Laparotomy is always a celiotomy, but celiotomy may not be a laparotomy. The term celiotomy is preferable, and is generally used in referring to a surgical opening of the abdomen, no matter what route is taken. *Abdominal section* is a term often used in this connection and is very applicable.

The abdominal cavity is seldom opened by making an incision through the abdominal walls of such animals as the horse, but it is frequently reached by other routes, such as in castration of cryptorchids, through the inguinal canal; or in ovarieotomy through the vagina; in the ox laparotomy is an operation followed with very good results; and the dog tolerates most any abdominal section better than other domestic animals. In locating the most favorable place to open the cavity the esplanchnology of the animal should be carefully studied. The solipeds with their distended abdomen, which is a result of the great development of the colon and cæcum, have no very favorable place for such surgical interference; ruminants, with their large, well-developed stomachs, and comparatively small colon and cæcum, have as a result of this splanchnotomic difference less tension upon the flank than the horse, hence tolerate laparotomy better; and carnivora, with their colon but little larger than the small intestine, the cæcum very small, and the abdomen not normally distended, can as a consequence of these peculiarities withstand celiotomy at various places with a degree of assurance that the results will be favorable.

I. *Celiotomy*.—The technique is as follows: Secure the patient properly, and if the work you wish to accomplish after the cavity is open requires delicate manipulation, a general anæsthetic should be administered. The surface chosen for the incision should be clipped and shaved, and made as near aseptic as possible by washing it with soap and hot water and a strong antiseptic solution. This should be done, when possible, the day before the operation, and repeat the application of soap and hot water and the strong antiseptic solution just prior to it. In the horse the incision should be made in the left flank a little below and anterior to the external angle of the ilium. Make the incision through the skin and external muscles of the length desired, then make a small opening at the superior extremity of this incision and insert the fingers into the peritoneal cavity and use them to prevent the viscera

from being injured while the incision is completed. After completing the operation in question the peritoneum and muscles must be sutured with catgut, and the skin with strong silk sutures.

If the operator is thorough in his aseptic methods, one of the following incisions may be chosen (Fig. 11). The first consists of an incision made on three sides of a rectangular figure (A) five centimetres wide and the required or desired length; the skin, subcutaneous tissue and the panniculus carnosus is separated from the external oblique muscle and turned back as in (Fig. 11 A); all haemorrhage should be arrested by the usual method; a dry aseptic cloth is placed over the opening thus formed, and a corresponding opening made into it; and then, an incision (b) is made through the abdominal muscles and peritoneum with the usual precautions (not to injure the viscera). After the desired operation has been completed, the peritoneum and muscles should be sutured with catgut (Fig. 11 A b); the panniculus, subcutaneous tissue and skin must be substantially sutured with strong silk, as represented in (Fig. 11 b B), leaving an opening (a B) at the lower portion of the wound for drainage.

The second method consists of an incision made on two sides of a triangular figure (Fig. 11 c), through the same structures as mentioned above and with the same aseptic precautions. The incision through the abdominal muscles and peritoneum may be curved (Fig. 11 C b) or straight and in closing it catgut sutures should be used, but in making the external suture, strong silk stitches are required (Fig. 11 D b). The lower angle of the incision (a) should be left open for drainage.

The after treatment will depend upon the indications: if the work was done aseptically the edges of the wound will promptly unite; if there is no indication of sepsis the dressings should not be disturbed; if undue inflammation follows it must be treated as the indications demand; and the attention given to drainage should depend upon the wound discharges. In the large animals it is not practical to apply fabric bandages encircling the entire body, for these cannot be kept in place well enough to form a safe protection for an abdominal section. A satisfactory method of protecting the wound against infection is to first provide a small opening at the bottom and plug it with a wad of antiseptic cotton, then after patiently drying the whole region it is painted with a layer of rosin and ether solution and then matted with cotton wool. Several layers are

thus applied until the matting is about one centimeter thick. In a few minutes the ether has evaporated and has left an impervious clothing which will remain intact indefinitely. This dressing may then be protected with bands encircling the body but ordinarily it will perform its function without further attention, until dressing becomes necessary, at which time it can readily be removed by dissolving it in ether or alcohol. The drainage plug of course demands daily attention but the remaining portion of the wound need nor be disturbed until safely united—about the seventh or eighth day, when the dressing is dissolved, the stitches removed and a new dressing applied. The sutures uniting the peritoneum and muscles are left in to become slowly absorbed. This simple after-care will answer for all animals.

1. *Gastro-intestinal Anastomosis.*—This, like all intestinal operations, is only rendered possible by celiotomy, and can be performed on animals of the canine species with very good results; in the bovine, the results are not so encouraging and in the equine species they are very uncertain. The indication for such interference is generally due to accidental wounds of the pyloric portion of the stomach, duodenum or jejunum; or diseased condition of the same, such as abscesses or tumors (*enteroncus*.)

This anastomosis can be made between the stomach and any part of the intestine that can be approximated without altering their position too much. The anastomosis is generally made between the duodenum or jejunum and the stomach, for it is necessary that as much of the intestinal tract be utilized as possible.

Operation.—In the canine species the operation is comparatively easy and simple, but in large animals the procedure is accompanied with many disadvantages and inconveniences. The incision into the abdomen may be made along the linea alba or on the left side of it, and large enough to make an exploration of the anterior part of the cavity, and after the condition has been ascertained it may be enlarged if necessary. The point to be connected to the stomach should be selected and all the contents of the intestine between it and the pylorus must be pushed or worked back beyond it; an incision is then made into the wall of the stomach and its contents removed; an incision, corresponding in size with the one in the stomach is now made into the wall of the intestine. The edge of the incision made in the intestine (Fig. 10-a) is sutured to the

edge of the one made in the stomach (Fig. 10-f) with two rows of stitches, one (h) passing through the muscular and serous coats of both stomach and intestine, and the other binding the mucous coats. The musculo-serous series of stitches should be made of catgut and those binding the mucous coats may be made with silk.

If desired, as many of the stitches as possible in the musculo-serous series may be ligated on the inside (h), but if it is more convenient to ligate them on the serous surface it can be done with the assurance that the results will be as satisfactory as if ligated otherwise. The stitches of the mucous coat may be either continuous or interrupted, the interrupted, however, are preferable, and should be so applied as to bring the edges together properly and bind them firmly.

In case that the portion of the intestine between the pylorus and the part anastomosed, it should be resected and the ends approximated; in no instance should the natural lumen of the intestinal tract be disconnected, and when the intestinal operation is complete the abdominal incision should be sutured, as in celiotomy.

After-treatment.—Shock must be treated as in all other operations; absolute rest should be enforced; peristalsis arrested by opiates; enemata containing carminatives should be used to relieve flatulence; and pain must be relieved by medication.

If indications of internal haemorrhage follow, the cavity must be opened and the haemorrhage arrested; symptoms of sepsis and peritonitis demand cold packs, and if unchecked the cavity must be reopened, the septic fluids washed out and the cavity irrigated with antiseptics; but if none of these complications appear the wound should not be redressed until the seventh or eighth day.

Nothing should be introduced into the stomach for the first two or three days, excepting now and then a very small quantity of alcohol and warm water; nutritious enemata should be substituted for food; stimulants may be given hypodermically; subcutaneous injections of a normal salt solution may be used to stimulate circulation and slacken thirst; liquid food in small quantities should be given after the second or third day and digestible food after the sixth.

The patient should not be permitted to over exert himself for at least a period of thirty days and the abdominal incision should be supported by an improvised truss.

(*To be continued.*)

SURGICAL ITEMS.

If indiscriminate operating is often responsible for the sacrifice of healthy organs, reluctance to operate also has a heavy responsibility to bear. . . . The conservatism which saves organs rather than health is not a true conservatism.—(*J. B. Wheeler.*)

Dried wound secretions which require prolonged soaking to soften and remove them, can be readily dissolved and washed off if soaked with hydrogen dioxide (H_2O_2).—(*L. A. M.*)

As surgery progresses, the operator becomes more fearless and his methods more simple; by practice, he avoids long and tedious procedures; by cautiousness, deferred convalescence; by asepsis, unsightly cicatrices; with anaesthetics, the infliction of pain; and, lastly, his knowledge of surgical anatomy leaves no telltale offenses against the solution of continuity.—(*E. M.*)

It is never advisable to perform an amputation immediately after an injury. The tendency of modern surgery is to delay the operation until the tissue has regained as much vitality as possible.—(*V. Sch. Int. Journal of Surgery.*)

As a surgical analgesic and for the purpose of facilitating the action of anaesthetics, heroin hydrochloride is being extensively used in the German clinics.—(*L. A. M.*)

The prognosis in cases of penetrating gunshot wounds of the abdomen treated on the expectant plan is extremely bad, the death rate being about 90 per cent.—(*Int. Jour. of Surgery.*)

The keynote of the treatment of general septic peritonitis must be the relief of the peritoneum and of obstructed lymph channels, and this can only be done by removal of the septic exudates and subsequent drainage.—(*Int. Jour. of Surgery.*)

The average patient when nearly well of a sickness will take a bottle of Rotgut's Relief or a box of Poopendike's Pills, and to these he will give all the glory, and "the doctor be d---d."—*Medical World.* The experienced veterinarian is fully capable of comprehending the *ennui* which actuated the writing of the above paragraph.—(*L. A. M.*)

EXTRACTS FROM EXCHANGES.

RUSSIAN REVIEW.

ON THE PHYSIOLOGY OF URINARY SECRETION [By Schwarz].—All the theories on urinary secretion agree on the

point that the principal part of the renal function belongs to the blood circulation through those organs ; but various opinions are expressed upon the relations which exist between the circulation on one side and the quantity of urine secreted on the other. With a special apparatus, Schwarz has succeeded in applying at will pressure on the renal vein, thus to reduce the rapidity of the circulation in the kidneys. In those experiments he observed not a reduction in the quantity of the secretion, but, on the contrary, an increase. When the circulation was completely shut up, urine still increased in quantity, varying between $2\frac{1}{2}$ to 50 times more. Ligature on the vein produced after two hours and fifteen minutes, a complete arrest of the secretion. Experimental arrest of the renal circulation, when made for a short time, produces no bad effects ; soon after the urine resumes its normal qualities. But, if the arrest is kept up for some time, the kidney swells, increases in weight, and in all its dimensions. The reduction in the renal secretion obtained by Hudenhain, is explained by Schwarz in admitting that the venous stasis, which occurs in these experiments, gives rise to blood coagulation in the tubes of Malpighi, and interferes with its permeability. Electric lighting of the superficial glands reduces the secretion of urine. Irritation has no effect on them when they have received first an injection of atropine. Experiments made with diuretic substances has shown that not one acts through the intermediate of the blood circulation on the kidneys—it must be supposed that they have a direct action on the epithelium of the urinary canaliculi.—(*Archiv. Vet. Russ. and Prog. Vet.*)

UPON THE COAGULATION OF MILK [*A. Rosai*].—The author has directed his attention to the minute chemico-bacteriologic study of the coagulation of milk. The determination of lactic acid in coagulated milk and the cultures on various medias were made with the methods of Gunther and Thierfeldel. The numerous experiments of the author show that in the coagulation of the milk, besides the lactic acid polarizing to the right, there is another lactic acid which is without optic effect. The formation of these acids depend on the temperature when the coagulation itself occurs. When it takes place at the temperature of the chamber dextogiric acid predominates ; when it takes place at $36^{\circ}-39^{\circ}$, it is the other. Three different micro-organisms promote the coagulation, the bacillus acid, paralactici, the bacillus luerolactic Halensis, and the micrococcus acidi paralactici Halensis. The most important and most

frequent is the first. At ordinary temperature milk coagulation is almost exclusively due to it. Neutral lactic acid (which does not act optically) is formed in the milk at the same time as the first, and second micro-organisms develop. Conditions on food of the micro-organisms have no influence on the nature of the acids they form.—(*Archiv. Vet. Russ. and Prog. Vet.*)

Poisoning by Bees' Sting [*J. Berger*].—While two bees' hives were moved, two thoroughbred colts were stung. One principally on one side of the neck and the other on the superior part of the respiratory tracts. On account of these stings, the first had a swelling as big as the hand on one side of the neck and in the other tracheotomy had been performed because of the difficulty of respiration. With him there was also a manifest dysphragia, which produced dropping of food in the trachea, followed by pneumonia by foreign bodies and death in six days. The swelling of the first was incised and disappeared in a few days. As curiosity the author mentions that the sire of the colt that died had bitten its dam during copulation on the left side of the chest and that when the colt was born, he carried on the same spot a defectuosity of the skin, just where the mother had been bitten eleven months before.—(*Archiv. Vet. Russ. and Prog. Vet.*)

ITALIAN REVIEW.

MEGALONOSPHENIA IN THE HORSE [*Dott. Carlo Nenci-
oni*].—In July last a horse, aged 17 years, was brought to him for a large suppurative collection on the left gluteal region. The abscess was opened and drained. After a few days the appetite became delicate, and gradually the animal manifested symptoms of excessive anaemia, with which he died in a few days. At the post-mortem nothing special was found in the thoracic cavity, but on opening the abdomen it was found to contain a great quantity of sero-bloody fluid with thick clots of blood. The liver was soft. The spleen was enormously distended and filled one-third of the abdominal cavity. Its consistency was puffy; its superficy bosselated; the follicles hypertrophied. At about the centre of the external face there was a laceration through which the slow, fatal haemorrhage had taken place. The seat of the abscess on the gluteal region presented nothing unusual beyond the lesion following a probably casual bruise. The weight of the spleen carefully taken was 13 kilogs 600.—(*Il Nuevo Ercolani*.)

DERMATOL IN AURICULAR CATARRH.—This astringent antiseptic, which renders such services in the treatment of wounds of bad nature, has been much used in cutaneous diseases of dogs, such as eczema, erythema, and Prof. Marconi has used it with great success in auricular catarrh, as follows: After thoroughly washing twice a day with a. solution of sublimate 1 to 1000 or 1 to 4000, ointments with dermatol are very advantageous, such as: Dermatol 1 part, vaseline 7, lanoline 2. Or again: Dermatol 3 parts, oxide of zinc 2, vaseline 30. A coating gelatine has also been prepared with dermatol, 1 part, oxide of zinc 1, gelatine, glycerine, distilled water of each 6 parts.—(*Riforma Veterinaria*.)

MALLEINE FOR THE DIAGNOSIS OF GLANDERS. [Dr. Borella Alete].—The author relates his observations on 9 horses which had cohabited with another which having died with colic was at post-mortem found presenting lesions of glanders. The temperature of these horses was taken for twenty days previous to being injected and found to vary in average between 37.1 and 38.5. The temperature rose in all the horses, and in various quantity: one only $\frac{1}{5}$ of a degree, five between 1.3 and 1.8; in the three others it rose 2°, 2.3°, 2.6°. The three were condemned and the other five considered as suspicious. They were killed. Eight presented very suspicious lesions in way of formation, one only had pulmonary tubercles.—(*Clinica Veterin.*)

TUBERCULOSIS IN PHEASANTS [Dr. Carlo Baldi].—Several of these birds were brought dead to the veterinary clinic of Perugia to be examined. They came from a large property where the mortality had been quite extensive of late. At the post-mortem the liver was generally found much enlarged, with nodules of various dimensions, some of which contained a certain quantity of caseous substance. The microscopic examination of these nodules revealed the presence of numerous bacilli of aviary tuberculosis. The treatment recommended by the author to control the infection was essentially prophylactic, as much isolation as possible, prevent the large gathering of birds, and heavy rich feeding.—(*Clinica Veterin.*)

LARVÆ OF OESTRUS IN THE PERINEUM OF A DOG [Dr. Carlo Baldi].—A very handsome hunting dog presented great difficulty in defecation. On examining him he was found having a painful tumor on the perineal region with two suppurating points. The tumor was opened and a small quantity of serum let out, but no pus. With a small forceps twenty larvæ of oestri were removed from the cavity, which was coated internally with

tincture of iodine. Recovery took place in a few days. This is the first time, says the author, that such larvæ have been found in that region. They belong to the gender called by Goudot *Dermatobia noxialis*.—(*Clinica Veterin.*)

DIPHTHERIC ANGINA IN FOWLS [Dr. Carlo Baldi].—Out of 60 head, 10 have died within a few days and the remaining 60 seem quite sick. The cadavers of five among the dead were brought to the author to find out the cause of the death and the remedy to save the others. The symptoms presented by those left no doubt as to the nature of the trouble, viz., diphtheric angina. These were: feathers standing, extreme loss of flesh, head bent on one side, beak gaping, rattling in the throat; in some the eyes were partly closed and looked blind, the temperature was raised one degree, the base of the tongue, the fauces and the palate were covered with yellow patches. The treatment consisted in the use of an iodo-iodiorated hydro-alcoholic solution applied all over the mouth and on the patches—the solution was made of pure iodine 10 grams, iodide of potassium 5 gr., alcohol 25 gr., distilled water 15 grams. Disinfection with vapors of burning sulphur was also used. Most of the birds were saved by this treatment.—(*Clinica Veterin.*)

CORRESPONDENCE.

THE PUBLICATION OF THE PROCEEDINGS OF THE A. V. M. A.—
DR. HOSKINS' REPLY.

PHILADELPHIA, PA., June 30, 1900.

Editors American Veterinary Review:

DEAR SIRS:—In your June issue there appears under the head of "Correspondence," a letter that is so false in its statements of facts, so unjust in its deductions, so virulent in its inferences, that I cannot allow it to pass without a few words of explanation in reply.

The letter is almost entirely personal, and for this reason, but much against the inclination and habit of the writer, it appears necessary to make a somewhat personal reply.

The undersigned humbly apologizes to the profession and to the United States Veterinary Medical Association for having urged for election as its President for *one* year, against the better judgment of his colleagues, the writer of the letter under review. It will be remembered that a pæan of thanks was

sent up at the end of that administration when every vestige of hope was dissipated of a possible re-election.

Equally do I seek the pardon of those who governed Purdue University for contributing to his selection to a place in that college, where his unsatisfactory services were borne in deep humility and a daily prayer for the hour of relief from his brief career in that institution.

I have already made my amends to the University at Bozeman, Montana, for the share of responsibility I bore in his selection as an instructor in that institution, where again his very unsatisfactory work and the well sustained charges of plagiarism brought forth a public rebuke that he has and continues to allow to go unchallenged.

I have long since apologized to those who were sought to accept the position he now holds at Cornell, for urging his consideration for that position and those who were buncoed into acceding him a three years' contract, the cunning outcome of his prior experiences in other institutions, and have many times uttered a prayer of sympathy for those around him, as I have learned from time to time of their retreat to the solitude of their rooms, to suffer in secret the pangs of regret and disappointment that have followed his selection. With those who have suffered under his boorish temperament as an instructor, helpless to flee from his consuming egotism, I have more than once been called to extend sympathy and comfort.

To the profession in the Empire State, on whose skirts he clung for many months, until arrangements were completed under sufficiently favorable auspices to enable him to obtain a State license and whose blighting influences already show in many directions, I offer my commiseration. If it were not for his phlegmatic earth-worm character he could not have made his parasitic return to association, professional and college work, and he would long since have gone to other pastures and accorded to his patient sufferers a relief that would be a lifted load of responsibility to which there would go up from the Great Lakes to Bedloe's Island a hearty accord of Amens.

I plead guilty to the preparation of the proceedings of the association in a manner wholly in keeping with what should characterize the production of all scientific work. I plead guilty to placing this work in a competent establishment, where three trained and experienced medical proofreaders were employed; a union shop where only the highest skilled labor is employed; a house that has sent forth for years the proceed-

ings of every scientific medical society of Philadelphia, and to which the medical society of the State of his temporary adoption and parasitic existence invariably comes when it wants first-class work. No, I never did, thank God, place this work in job printing houses or country press, where scab labor is employed, and turn out as representative of a scientific body books that would disgrace a patent outside newspaper office, and I hope and trust that I may never be charged as a party to any such doings. I have only pity for one whose early training was so sadly neglected that when he was admitted to the association of men with higher ideas that there was nothing upon which could be developed some of the instincts of a gentleman. Even after years of friction there has been no wearing away of the traits that are looked for in the porcine tribe. These traits continue to show as bristles even when he is accorded a place among scientific associates, and especially in connection with his record of appreciation of the recognition accorded him after his name was stricken from the rolls for non-payment of initiation fees and dues, and he was numbered upon the records of that association only as a contributor to the deficit and as responsible, in part, for the loss of nearly fifteen hundred dollars in fees and dues that followed the purging of the rolls of that body, which had been maintained and sustained by veterinarians who were accorded membership therein under conditions similar to those that prevailed at his election.

I challenge the writer of that article, and summon him before the Executive Committee of the American Veterinary Medical Association, to produce one scintilla of evidence that one cent of money of that association was ever improperly used by me. I hurl back as an unmitigated and deliberate lie the insinuation that one cent of the money of the association was ever used in the *Journal's* Specials to convention cities.

Within the archives of the association there remains today a detailed daily statement of the receipt and expenditure of every cent of money received and disbursed by me during my official career, and, wherever it was possible to furnish it, a voucher for every dollar, and I demand the production of these to substantiate my claim. These accounts were duly audited by the auditing committees and transmitted to my successor without a question raised or an account disputed.

I reiterate the charges that an uncalled for haste in the issuance of the proceedings forced the omission of one of the most important papers, if not the most important, at a time

when there should have been no effort left unturned to have published the one relative to army legislation by Prof. R. S. Huidekoper, covering his subject in a more thorough manner than ever before and just on the eve of the assembling of Congress, when every avenue of influence and aid was to be summoned to win for us a battle that we have waged for ten long years. This matter has had to be republished since at the expense of the association and the profession, and has lost some in value by this haste and false economy. I renew the charge of the emasculation of a paper presented by a New York veterinarian, that has since been published by the *Journal* as submitted to the association, and its comparison will need no further comment.

From more than a half dozen sources there has followed complaint and criticism of the way the discussion has been edited, and there should cease forever the method that has prevailed for several years of imposing upon those who have participated in the discussion, the correction of the stenographer's notes during the sessions of the convention. This system forces members to protect themselves as to what is to appear as their views or expressions, to edit the same, and at the same time to attempt to keep in touch with the convention proceedings or to retire from the hall and go over the notes under the most disadvantageous circumstances and thus lose much that they had traveled hundreds of miles to participate in. Keep this up and we will find many remaining at home who are too valuable to lose, or they will remain silent in their seats rather than to injure their scientific standing before the world, to gratify the egotism of one, who, Czar like, declares this the only way to publish the scientific annals of the profession's progress. This has been true of every volume published, and the peanut economy gloated over by the chairman would be more fitting to the exactions of a cheap grocer than a scientific body.

Very respectfully yours,

W. HORACE HOSKINS.

IN one day recently more than 5000 horses were sold at public auction in the yards at Sioux City, Iowa. These horses were all sold by one firm, which also made a record of disposing of upwards of 12,000 horses in one week. They were all range horses, and the prices varied from \$10 to \$50. Thousands of visitors were attracted by the spectacle of so many horses at one point.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

PROGRAMME OF THE THIRTY-SEVENTH ANNUAL MEETING, TO
BE HELD AT DETROIT, MICH., SEPT. 4, 5 AND 6, 1900.

Headquarters.—Russell House, corner Woodward Avenue and Cadillac Square. There are numerous hotels in the immediate vicinity of the Russell House, and the tastes of the guests may be easily suited in style and price. If members and visitors will communicate with Dr. S. Brenton, Chairman of the Local Committee of Arrangements, 121 W. Alexandrine Ave., Detroit, Mich., stating full particulars of the accommodations they may wish, all arrangements will be made in advance.

Place of Meeting.—Large Convention Hall of the Russell House, Woodward Avenue and Cadillac Square.

Clinics.—Detroit Veterinary Sanitarium, rear 121 W. Alexandrine Ave., Wednesday and Friday mornings, from 8 to 10.

Officers of the Association.—President, Leonard Pearson, of Pennsylvania; Vice-Presidents, J. F. Winchester, of Massachusetts; S. Brenton, of Michigan, and H. L. Ramacciotti, of Nebraska; Secretary, S. Stewart, of Kansas; Treasurer, Wm. Herbert Lowe, of New Jersey.

Committees.—Executive—Tait Butler, Chairman; D. E. Salmon, W. Horace Hoskins, M. H. Reynolds, A. W. Clement, A. T. Peters, Roscoe R. Bell, and the officers *ex officio*. Finance—Lemuel Pope, Jr., Chairman; M. Stalker, G. A. Johnson. Publication—M. H. Reynolds, Chairman; R. P. Lyman, Roscoe R. Bell, John J. Repp, S. Stewart. Intelligence and Education—W. H. Dalrymple, Chairman; James Law, N. S. Mayo, John W. Adams, A. H. Baker. Diseases—C. A. Cary, Chairman; James B. Paige, E. M. Nighbert, John P. Turner, M. E. Knowles. Army Legislation—D. E. Salmon, Chairman; R. S. Huidekoper, M. Stalker, W. Horace Hoskins, A. W. Clement. Resolutions—L. H. Howard, Chairman; Wm. Herbert Lowe, L. A. Merillat, C. E. Cotton, W. B. Niles.

The details of the coming meeting of the American Veterinary Medical Association are about completed, and it would seem that nothing was lacking to make this the banner meeting of the association. The Local Committee of Arrangements has made excellent and complete preparations to receive the veterinarians of the country and treat them most royally. And it is expected that the ladies will accompany the veteri-

arians, for special arrangements have been made for their entertainment.

Special meetings of the Finance Committee, Publication Committee, and Executive Committee will be held at the Russell House, on Monday afternoon, September 3. The regular session of the association will convene, at 9 A.M., Tuesday, September 4th. The Mayor, the Hon. William C. Maybury, will deliver the address of welcome, the response to be made by Dr. W. Horace Hoskins.

THE LITERARY PROGRAMME

will include the following papers:

"Labor, Rest and Confinement," by Dr. W. L. Williams, Ithaca, N. Y.

"Relation of Veterinary Medicine to the Public Health," by Dr. William Herbert Lowe, Paterson, N. J.

"Psoroptes Communis Equi and Bovis in Montana and N. W. Territory," by Dr. M. E. Knowles, Helena, Mont.

"Remote Effects of Drugs," by Dr. L. A. Merillat, Chicago, Ill.

"Examining and Licensing of Stallions for Stud Purposes," by Dr. J. I. Gibson, Denison, Ia.

"The Relation of Lymphatics to Meat Inspection," by Dr. Tait Butler, Indianapolis, Ind.

"Notes on the Tuberculin Test in Wisconsin," by Dr. G. Ed. Leech, Milwaukee, Wis.

"Antiseptic Therapeutics," by Dr. J. F. Winchester, Lawrence, Mass.

"Rabies," by Dr. D. S. White, Columbus, Ohio.

"Urinalysis in Veterinary Practice," by Dr. Pierre A. Fish, Ithaca, N. Y.

"Veterinary Progress in Michigan," by Dr. William Jopling, Owosso, Mich.

"Spavin, its Etiology and Treatment," by Dr. J. W. Martin, Kankakee, Ill.

"Inoculation against Texas Fever," by Dr. J. W. Connaway, Columbia, Mo.

"Snakes, Venoms and Antidotes," by Dr. E. M. Ranck, Philadelphia, Pa.

"Obstacles to Enforcing Regulations Requiring Tuberculin Test in Interstate Cattle Traffic," by Dr. Austin Peters, Boston, Mass.

"Practical Antiseptics," by G. A. Johnson, Sioux City, Ia.

"Control of Cattle Ticks," by Dr. Cooper Curtice, Raleigh, N. C.

"Difficulties in the way of Municipal Meat Inspection in the South," by Dr. C. A. Cary, Auburn, Ala.

"Experimental Tuberculosis, Human and Bovine, in Domestic Animals," by Dr. R. R. Dinwiddie, Fayetteville, Ark.

THE CLINICAL PROGRAMME.

A series of surgical clinics will be held on Wednesday and Friday mornings at the Detroit Veterinary Sanitarium, rear 121 W. Alexandrine Ave. The clinics will begin promptly at 8.00 o'clock and continue two hours. A number of well-known surgeons expect to be present and demonstrate one or more operations each. The list of clinicians includes: Dr. L. A. Merillat, of the McKillip Veterinary College; Dr. W. L. La Baw, of the Veterinary Department of Harvard University; Dr. W. L. Williams, of the New York State Veterinary College; Dr. A. H. Baker, of the Chicago Veterinary College; Dr. J. W. Adams, of the Veterinary Department of the University of Pennsylvania; Dr. H. D. Gill, of the New York-American Veterinary College; Dr. R. C. Moore, of the Kansas City Veterinary College.

A large variety of cases requiring surgical interference will be provided by local veterinarians, the kinds of cases which practitioners are often called upon to treat, and which frequently prove troublesome, such as fibroma of the elbow, tumors of head and face, roaring, crooked tail, lameness due to diseases of the extremities, etc. The following special operations have been promised:—Ridgling castration under antiseptic precautions with expectation of healing without suppuration, by Dr. W. L. Williams; arytenoideraphy for cure of roaring, by Dr. L. A. Merillat; operation for tumor on elbow (shoeboil), by Dr. W. L. LaBaw; immediate and permanent closure of alveolar opening into maxillary sinus following removal of tooth, by Dr. R. C. Moore.

PROGRAMME OF ENTERTAINMENT.

Tuesday, September 4.—Morning: Visit to Convention Hall to witness the opening exercises. Afternoon:—Trolley ride to Palmer Park and visit to ex-Senator Palmer's celebrated Log Cabin.

Wednesday, September 5.—Morning: Visit to the Detroit Museum. Afternoon: Ladies will be entertained at luncheon

by Mrs. S. Brenton, at her residence, 121 W. Alexandrine Avenue.

Thursday, September 6.—Morning : Carriage ride about the city, visiting Belle Isle Park and Water Works Park. Evening : Theatre party.

Friday, September 7.—Visit to Parke, Davis & Cos'. Laboratory, where a light luncheon will be served ; from there the trolley will be taken to the steamer, giving the members the most delightful sail to New Vienna, up the St. Clair River, where a "fish and frog supper" will be tendered all the visitors by the local association.

RAILROADS, ETC.,

The railroads have granted the usual excursion rate of full fare for the going trip and one-third fare for the return, on the certificate plan. This rate ought to insure a large attendance from the large area of which Detroit is the centre. Eastern veterinarians, who have enjoyed a most wonderful increase in practice, and are wondering how they can leave their businesses, should remember that it will be profitable to themselves and their patrons to gather with veterinarians from all parts of America to compare notes and learn from each other's experiences.

Veterinarians living in the vicinity of New York City, Philadelphia, Baltimore and Washington, can reach Detroit as quickly and as cheaply as those living in the Missouri River Valley, and they should not hold that it is too far for them to go to this meeting of the A. V. M. A.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

Arrangements are about completed for the tenth annual meeting of this society, which convenes at Ithaca, Sept. 12 and 13, and there seems now no possible doubt but that the Empire State is to have the best meeting ever held by a local organization within its borders. Letters to various officers from every section of the State foretell a large attendance, and this being assured there can be but little question that the important programme detailed herewith will insure unflagging interest and a profitable meeting. The Committee of Arrangements, headed by Dr. W. L. Williams, ably seconded by such men as Drs. James Law, Charles Cowie, J. A. Genung, and Secretary Morris, have completed a schedule that will afford the greatest

amount of innocent pleasure without diverting attention from the educational programme. For the first time the clinical feature will be introduced at the meetings of this association, but it will be in the nature of an addition, and not a substitute, as the hours assigned the surgical clinics will encroach but little upon the regular programme.

The papers announced up to date are as follows :

"Metritis," by J. A. Bell, V. S., of Watertown.

"Spaying of Mares as a Remedy for Vice," by A. H. Ide, V. S., of Utica.

"Rabies," by Prof. Wilfred Lellman, of New York City.

"Castration by Tortion," and demonstration of a casting method, by Charles Cowie, M. R. C. V. S., of Ogdensburg.

"Swine Diseases in Clinton County," by J. A. McCrank, D. V. S., of Plattsburgh.

"Acute Indigestion ; Its Right and Wrong Treatment," by Wm. B. Switzer, V. S., of Oswego.

"Clinic and Microscopic Observations on a Case of So-called Hermaphroditism in the Horse," by Profs. S. H. Gage and W. L. Williams, of Ithaca.

"The Uses of Small Animals for Purposes of Diagnosis" (with demonstrations), by Prof. Veranus A. Moore, of Ithaca.

"The Clinical Features and Therapeutics of the So-called Botryomycosis," by Prof. W. L. Williams, of Ithaca.

"Results of Histologic and Bacteriologic Study of So-called Botryomycosis," by Prof. Veranus A. Moore, of Ithaca.

"_____, " by Robert W. Ellis, D. V. S., of New York City.

"_____, " by E. B. Ackerman, D. V. S., of Brooklyn.

"_____, " by Dr. Darby, of Fort Plain.

The surgical clinics will be especially valuable and interesting, as the facilities for operating are exceptionally good. Chairman of Arrangements Williams is taking an absorbing interest in this part of the programme, and writes under date of July 16 as follows : "We are planning for a thorough clinic, illustrating useful operations, with simple methods of confinement, and expect to demonstrate the spaying of mares, cows, bitches, and cats : the castration of cryptorchids, caudal myectomy for gripping of the reins, the various neurectomies and Dr. Merillat's operation of arytenoideraphy, together with demonstrations of the methods of confining for operation by operating tables and stocks, with anaesthesia and antiseptics. A number of operators have signified their intention of taking

part in this programme, with the subjects yet unannounced." Among those likely to take part in the clinics are: Drs. W. L. Williams, Charles E. Clayton, Robert W. Ellis, H. D. Gill, Charles Cowie, E. B. Ackerman, George H. Berns, C. E. Shaw, C. R. Perkins, G. T. Stone and B. A. Gallagher.

The Ithacans ask that the guests be turned over to them from about 6.30 P.M. of the first day to be at their mercy until 11 P.M., and while we cannot guess what is in store for the visitors there can be little doubt but that they will be pleasantly entertained. The ladies of Ithaca will see that visiting ladies are comfortably taken care of, and there will be plenty to keep them from becoming lonesome.

For those who desire, student rooms can be secured within five minutes' walk of the convention room, and meals can be obtained on the European plan, thus making the sojourn very inexpensive.

It is desired to call the convention to order promptly at 9 A.M. on the first day. Visitors from New York City and adjacent territory could leave on Tuesday evening at 9.30 to 10 via the Lehigh Valley or the D., L. & W. road, arriving at Ithaca at about 7 A.M., Wednesday. Those from Albany could get the same train at Binghamton, and those in the district between Albany and Buffalo on the New York Central could go by two or three routes, arriving in Ithaca from 8.40 to 9.30 A.M., while Buffalonians can leave at 6 on the previous evening and arrive at 10 P.M.

MISSOURI VALLEY VETERINARY MEDICAL ASSOCIATION.

The twenty-fourth regular meeting convened at the Y. M. C. A. Building, St. Joseph, Mo., on June 25, 1900, the regular officers, Dr. John Forbes, President, and Dr. John B. Wright, Secretary, in their respective places, and with the following members, visiting veterinarians and others present: Drs. R. C. Moore, S. Stewart, Charles A. Monney, H. C. Babcock and J. W. Parker, of Kansas City; H. V. Goode, E. J. Netherton, H. J. Washburn, J. A. Sloan, J. E. Blackwell, Charles E. Steel, Ripley and Lockwood, of St. Joseph, Mo.; G. R. Conrad of Sabetha, Kans., John Ernst of Leavenworth, Kans., and L. D. Brown of Hamilton, Mo.

During the afternoon an interesting surgical clinic had been held at Dr. E. J. Netherton's veterinary hospital, Drs. Steel and Netherton performing a variety of creditable operations.

The Board of Censors reported favorably on applications by Dr. Charles E. Steel and Dr. Joseph W. Parker for membership, and they were accordingly elected active members.

The following officers were chosen for the ensuing year: Dr. John Forbes, re-elected President; Dr. L. D. Brown, First Vice President; Dr. John Ernst, Second Vice President; Dr. J. W. Parker, Secretary and Treasurer; Drs. J. A. Sloan, E. J. Netherton, C. E. Steel, J. B. Wright and R. G. Conrad, Board of Censors.

The retiring Secretary-Treasurer, Dr. Wright, submitted a report of the business and condition of the association. The report shows regular meetings well attended, valuable papers contributed, and that the association is in a thriving condition.

The literary programme of the evening was as follows: A paper on "Education of Lawmakers,"* by Dr. J. W. Parker, being a plea for united action in the present campaign and with the legislative bodies of Missouri, Iowa and Kansas, for adequate veterinary laws. The discussion was led by Dr. S. Stewart, who ably supplemented the thoughts advanced by the essayist. General discussion, participated in by nearly all present, and at the close of the discussion Dr. E. J. Netherton offered a motion that the President appoint a committee of five to coöperate with like committees of the veterinary associations of Missouri, Iowa and Kansas, with a view of securing better veterinary legislation. Being duly seconded, it was so voted, unanimously. The President appointed Drs. Stewart, Parker, Netherton, Moore and Goode.

Dr. J. A. Sloan presented a well prepared paper on "Healing of External Wounds,"* dealing especially with the processes involved. Discussion led by Dr. H. J. Washburn, and participated in by Drs. Moore, Stewart, Steel, Netherton, Parker and Lockwood.

Dr. R. C. Moore read an instructive paper on "Defective Eyelids,"* restricting it to congenital malformations. The discussion, which was led by Dr. C. E. Steel, brought out many interesting and instructive points.

The next meeting of the Association will be held at the Kansas City Veterinary College, 1406 Holmes Street, Kansas City, Mo., September 17th, 1900, and a sufficient number of papers have already been promised to guarantee an interesting programme.

JOSEPH W. PARKER, *Secretary.*

* All of the papers have been received and will be published as rapidly as possible.—ED.

ALUMNI ASSOCIATION A.V.C.—President Robert W. Ellis has made the following appointments upon the Executive Committee of this association for 1900: W. Horace Hoskins, '81 (chairman); Charles S. Atchison, '98; Harry E. Bates, '89; Charles E. Clayton, '93; Roscoe R. Bell, '87; William J. Coates, '77; Theodore A. Keller, '92. With these active members of the association upon the Executive Committee, reinforced by the *ex-officio* members (the present officers) there should be sufficient and competent material to keep an interest alive among the alumni of the A. V. C.

NEWS AND ITEMS.

IF Eastern veterinarians find the trip to Detroit impossible, compromise by a visit to Ithaca, Sept. 12 and 13.

"I AM GLAD that the REVIEW still leads, and may its shadow never grow less."—*W. L. West, V.S., Belfast, Me.*

MISSOURI AND KANSAS now require the tuberculin test for their cattle by qualified veterinarians.

OUR E. C., the *Journal*, has a "Department of Canine and Feline Medicine and Surgery," conducted by Cecil French, D.V.S., of Washington, D. C.

DR. GEORGE H. BERNS, of Brooklyn, N. Y., spent the greater part of June at Sharon Springs, where he was taking baths for the relief of his only enemy—rheumatism.

DR. H. F. STEELE, formerly of New York City, is stationed at Santiago, Cuba, in charge of all the Quartermasters' horses and mules not assigned to duty, in addition to the hospital.

H. C. MOORE, of the veterinary firm of Moore Bros., Albany, is dead. They were extensive advertisers of veterinary remedies.

DR. E. M. HEATH, of Winsted, Conn., graduate of the Chicago Veterinary College, class of 1897, died May 6, of tuberculosis. Deceased was a member of the American and Connecticut Veterinary Medical Associations.

PROF. JAMES MCCALL, of Edinburgh, Scotland, is conducting a series of experiments in the treatment of glanders upon twenty-seven horses furnished him by the Glasgow Tramways Company.

A PATENT BRANDING MACHINE, employing an indelible fluid, instead of burning the hide of animals, is said to be a success, after extensive experimenting upon Wyoming range animals.

OFFICIAL STATISTICS show that Great Britain has sent 91,600 horses to South Africa for the use of the army operating there. The horses have been bought in the United States, Canada, the Argentine, Syria and indeed wherever they could be had for reasonable figures in any quantity.

IOWA VETERINARY EXAMINING BOARD.—Governor Shaw, of Iowa, has made the following appointments to constitute the Board of Veterinary Examiners under the recent law regulating the practice of veterinary medicine in that State : Drs. S. H. Johnson, of Carroll ; H. E. Talbott, of Des Moines, and W. A. Heck, of Maquoketa.

THE statistics issued by the Government indicate that at Jan. 1, 1900, the chickens, ducks, geese, turkeys, etc., in the United States had a value of \$500,000,000. The number of eggs laid were estimated at 1,504,000,000 dozen—a sum too vast for the comprehension of the human mind.

THE American jockeys are showing their English cousins how to get speed out of race-horses. On two occasions this season the little handful of American riders won every race run at one of the meetings, in some instances finishing one, two, three.

CHARLES BACHMAN, former owner of the famous Stony Ford Stock Farm, and breeder of some of the most famous trotting horses of the American turf, died recently of heart disease. Wm. C. Whitney has purchased Stony Ford and will breed thoroughbreds upon a large scale.

IT is estimated by the automobile manufacturers that it costs fifteen cents a mile to furnish the large pneumatic rubber tires as required by vehicles the size of a coach. Liverymen compute that a coach kept for public hire will average 25 miles a day. At this rate it will cost \$3.75 per day for rubber tires alone ; this is not half of the expense necessary to operate one.

AT one of the New York markets where Hebrew dealers buy poultry and vegetables a system of poisoning the horses used by the dealers has been going on until some sixty have died. Dr. George Cohen, of Division Street, treated a number of the cases, and from the symptoms presented gave the opinion that arsenic was being used. Professor Friedburg, the chemist, being called to analyze the contents of the stomach of a number of the cases found arsenic in each one.

THE CAPSULE METHOD OF IMPREGNATION seems to be getting popular, as orders for capsules have recently been received in this country from England, France and other coun-

tries. Much success is reported by breeders who have employed it, one claiming 23 successes in 24 attempts. The method is very simple: When copulation has occurred the overflow semen is scraped from the vagina upon withdrawal of the penis by being collected into the capsules and sealed. A capsule or two is then inserted into the uterus of a mare in oestrus, and few failures are said to occur.

ANCIENT THERAPEUTICS.—Those who fancy the "good, old-fashioned remedies" of our forefathers ought to try the following, which was given in public print in England in 1681. The trouble for which the cure is recommended is common enough still, in all conscience. Here is the formula: "The master medicine of all medicines for a back-sinew strain, or any grief, pain, straitness, shrinking or numness of joyns or sinews: Take a fatte sucking Mastive whelp, slay it and flay it and bowel it; then stop the body as full as it can hold with gray snails and black snails, then waste it at a reasonable fire. When it begins to warme, baste it with six ounces of the oyl of spike made yellow with saffron, and six ounces of the oyl of wax. Then save the drippings and what moysture soever falls from it, whilst any drop will fall from the whelp, and keep it in a gallypot. With this oyntment anoint the strain and worke it in very hot, holding a bar of iron before it. And thus do morning and evening till the cure be finished."

EDITOR HOSKINS, of the *Journal*, is one of the most versatile and insatiable of veterinarians, ever on the alert for new fields to conquer. He is the head of a large private practice in Philadelphia; editor and publisher of the *Journal of Comparative Medicine*; publisher of several text and reference works connected with the veterinary profession; professor of jurisprudence at the University of Pennsylvania; president of the Atlantic Wave Motor Co. (by which the power of the white caps is to be utilized for the generation of commercial electricity); an officer of the Atlantic City Artificial Ice Company; a cold-storage warehouse in the same city; an active worker and regular attendant upon all veterinary medical associations within a radius of one hundred miles of the City of Brotherly Love; besides having time to engage in the active politics of his native city. Surely he is a worker of energy and versatility, and deserves both riches and renown in exchange for the expenditure of so much vitality.

A PROLIFIC BLOODHOUND.—Dr. A. E. Metzger writes the REVIEW as follows: "I have to report a bloodhound bitch that

whelped seventeen (17) living puppies in November last, which I consider something phenomenal, and would be glad to hear if any member of the profession has anything to report that equals it." [While the litter referred to is large, we do not consider it phenomenal, as it has frequently been exceeded. The record was for many years held by a collie bitch in Scotland, who gave birth to 23, but recently it was reported from Mr. J. Pierrepont Morgan's Cragston kennels that one of his collies had borne 27. Within a few weeks the New York daily papers were claiming a record for the prize-fighter Corbett's setter, which had given birth to 17 pups.—EDITOR.]

"ENCLOSED please find money order for three dollars (\$3.00) to renew my subscription for nineteen hundred. Have only read the REVIEW for one year, but you may count on me as a regular subscriber from now on."—*R. R. Hammond, Le Mars, Iowa.*

FOR SALE OR TO LET,

A Veterinary Practice, consisting of a well-established Hospital, situated in one of the most celebrated towns in America. The right man ought to easily do a business of at least \$5000 a year, as the present owner has averaged \$7000 a year for ten years. The hospital contains 10 large standing stalls, and 3 big box stalls; a very large carriage-house, operating room, office, medicine room, and seven nice large living rooms over the office, with all up-to-date improvements, and a very nice up-to-date ten-room cottage; all property in first-class condition. A grand chance for the right man. Terms for sale or lease will be made satisfactory. Population 18,000; for about four months it is from four hundred to six hundred thousand. No other qualified Veterinarian in the county. Address C. S. T., care AMERICAN VETERINARY REVIEW.

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Can make money for themselves and do much good to their profession by getting up Subscription Clubs for the REVIEW. Write us for club rates and full information.

REVIEWS FOR EXCHANGE.

I have these duplicates: Vol. XVIII, July (1894); Vol. XV, April and May (1891). I need the following: Vol. XIX, September and October (1895); Vol. XVII, January (1894). Would like to exchange with some one having duplicates, etc. HUGH THOMSON, V. S., Sharbona, Ill.

NOVEMBER, 1894, REVIEW WANTED.

To complete my file I would like to secure No. 8, Vol. XVIII of the AMERICAN VETERINARY REVIEW. Any one having an extra copy of that number please address H. D. STEBBINS, V.S., West Winfield, N. Y.

BACK NUMBERS REVIEW FOR SALE.

Volumes 2, 4, 8, 9, (complete); April, '79, '81, '82, '83; May, '79, '81; June, '79, '81; July, '79, '81; August, '79, '81, '83; September, '79, '81, '83; October, '79, '81; November, '79, '81, '83; December, '81, '82, '83; January, '80, '82, '83, '84; February, '80, '83, '84; March, '83, '84.

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